THE

AMERICAN REVIEW OF TUBERCULOSIS

ABSTRACTS OF TUBERCULOSIS

VOLUME VI MARCH, 1922 ABST. No. 1

Influence of Diet on Mortality from Tuberculosis in Germany.—In 1914 the calories consumed per capita were 2600. This number sank in the summer of 1916 to 1983; in the winter of the same year to 1344; in the summer of 1917 to 1100; while in Königsberg it was 1250 in the year 1917, 1350 in 1918 and 1470 in 1919. The following table shows the mortality statistics of the Health Department of the German Government for all German cities with a population of 40,000 and over, compiled at four week intervals:

WEEKS	1914	1915	1916	1917	1918	1919	1920
1–4	2,367	2,415	2,317	2,747	2,992	3,041	1,901
5–8	2,513	2,519	2,575	3,272	3,566	3,538	2,329
9–12	2,541	2,506	2,913	3,510	3,970	2,824	2,551
13–16	2,703	2,761	2,999	3,613	4,028	3,350	2,630
17–20	2,612	2,597	2,798	4,259	4,332	3.964	2,403
21–24	2,349	2,439	2,614	4,020	3,639	3,598	2,461
25–28	2,260	2,161	2,413	3,590	3,448	3,327	1,575
29–32	1,857	1,916	2,120	3,214	3,145	2,581	1,716
33–36	1,893	1,732	2,117	2,557	3,109	2,335	1,868
37–40	1,891	1,775	2,073	2,635	2,652	2,354	1,871
41–44	1,991	1,929	2,140	2,706	2,993	2,010	1,862
45–48	1,963	2,050	2,261	2,535	3,018	1,792	1,899
49–52	2,206	2,127	2,475	2,783	2,812	1,810	2,077
Total.....	29,146	28,927	31,815	41,501	43,704	36,524	27,178

This table shows that with 1916 the rise in tuberculosis mortality was steady and rapid, reaching its height in 1918 and then dropping back to prewar figures. These mortality figures closely parallel those of the drop in average food calories per capita during the same years and back to the normal in 1920. Mortality statistics for the rural districts are not so reliable, owing to the fact that in many of these communities physicians were few in number, and consequently both the autopsies and the reporting of cases were not carried out adequately. However, the mortality curve for cities of over 40,000 inhabitants is compared with the mortality curve from tuberculosis for three rural communities at like intervals. The latter show a rise, but not so marked a one as do the cities in 1917 and 1918, with the highest mortality in 1919 instead of in 1918. It was noticed that instead of finding the highest mortality toward the end of the winter, as for most respiratory diseases, this occurred instead during the first months of the summer. The year 1920 shows a mortality lower than 1914, owing undoubtedly to the excessive mortality during the

war period, brought on by privations, especially the diminished rations, so that many tuberculous persons who would during normal times have lived much longer, died prematurely, not to speak of the greater incidence of tuberculosis arising from war conditions.—*Einfluss der Ernährung auf die Tuberkulosesterblichkeit, H. Selter and Nehring, Ztschr. f. Tuberk., April, 1921, xxxiv, 1.*

Advance in Clinical Knowledge of Tuberculosis Due to the War.—Two circumstances, in particular, made the war a fruitful period. One was the abundance of documentary evidence that it furnished; the other, the conditions for clinical examination prevailing at the centres for diagnosis and selection of men. The immense number of facts observed by the military phthisiologists were submitted to control investigations by nonmobilized specialists and thus, in a short time, was accumulated a mass of valuable information. The conditions of examination were controlled with a view to avoid errors of diagnosis, and knowledge of the necessity for careful examination was popularized. In the search for the bacillus, the war emphasized the necessity for exhaustive examination of the sputum and the need for a complete series of negative proofs before a diagnosis of tuberculosis should be abandoned. The value of a negative albumin reaction as an indication of freedom from tuberculosis, at least in an active form, has been confirmed, and also the relative value of a positive albumin reaction as an index of tuberculosis. Concerning diagnosis of localization the observations accumulated during the war have confirmed the already existing scepticism as to the value of a diminution of the vesicular murmur, and have shown that this is rather the sign of an extinct than of incipient tuberculosis. These observations have also demonstrated the frequency of the syndrome of insufficient apical respiration in subjects entirely free from tuberculosis. It has also been learned that roughened breathing belongs to a congestive state of the bronchioles, and not properly to a tuberculous condition, although it may reveal an incipient tuberculosis. The roughened respiration of bronchial origin must be distinguished from the respiratory frictions of pleural origin. The prolonged expiratory souffle has no value unless it is unilateral and accompanied by signs of pulmonary induration. The signs of basal localization have often been observed, not solely as evidences of the reawakening of an inoculation tubercle, but in new subjects, especially in the negro soldiers and in young men from the mountains or the country. In the many thousands examined fluoroscopically there were seen very often opaque masses, not otherwise to be detected, in the region of the hilum. These are relics of an adenopathy contemporaneous with the inoculation tubercle. The X-ray has given important information during the past five years on the evidences of fissural and axial tuberculoses, much more frequent than used to be thought. Much information has been obtained for aid in the differentiation between tuberculosis and a group of false tuberculoses, namely, obstinate tracheobronchitis in subjects with rhinopharyngeal affections, chronic catarrh with mediastinal adenitis in gassed soldiers, and delayed pleuropulmonary sequellae of chest wounds. Concerning that most important question, as to whether or not a tuberculosis is in evolution, we have become aware that all that can be established is a certain presumption, and that only after prolonged observation, in the course of which all the known processes of exploration have been made use of. The war has shown the extreme frequency of tuberculosis and the need for sanitary education. It has also confirmed the belief in a reawakening of tuberculosis in the adult, and has shown the rôle of contributory accidents. It has permitted the recognition of the extreme infrequency of tuberculosis as a result of chest wounds.—*Les enseignements cliniques tirés de la guerre par la phthisiologie, E. Sergent, Rev. d. l. Tuberc., April-June, 1920, i, 89.*

Governmental Control of Bovine Tuberculosis in Germany.—Manifest tuberculosis of cattle includes advanced pulmonary tuberculosis, or tuberculosis of the udder, uterus or intestines. This is reportable to the official veterinarian, who institutes proper measures which may consist in slaughtering condemned animals. *Disposition of milk*: Milk from such animals must not be used, sold or given away unless heated to a certain temperature and for a certain time. Milk from animals with diseased udders must not, even after heating, be used for human consumption. *Suspects*: Suspected cattle must be isolated in special stalls and be marked; if they are suspected of tuberculosis of the udder the milk must be heated properly before being disposed of. The prophylactic procedure with animals with manifest tuberculosis or animals that are probably tuberculous is to brand them. Rules for their isolation, for the use they may be put to, and the method of slaughtering are contained in the original law and are controlled by the government. This leaves the killing of evidently tuberculous cattle, except those with tuberculous udders, to the decision of the owner. *Routine of*

inspection: The official veterinarian examines the animal, if it is suspected or has pulmonary tuberculosis, by making proper tests and sending specimens to the laboratory for bacteriological diagnosis. He issues orders concerning isolation, labeling, and disposal of the animals, warns the owner of the dangers of the milk and informs him of voluntary measures of tuberculosis control. If tubercle bacilli be found, the presence of tuberculosis is established; and the official can order the animal to be killed (with tuberculous udders) or be otherwise disposed of (by the owner). If no tubercle bacilli are found, isolation is then revoked. The clinical picture of tuberculous animals is described as follows: Dull appearance, tight hide, rough fur and palpable lymph nodes were found in 50 per cent. Cough (spontaneous or after moving about) was present in 55 per cent of cases with open tuberculosis. in 15.6 per cent of closed, in 6.9 per cent of cases of nontuberculous nature and in 22.5 per cent of healthy animals. Râles are the most important symptom of pulmonary tuberculosis in cattle. The voluntary disposition of tuberculous cattle by the owner does not prove satisfactory.—*Die staatliche Bekämpfung der Rindertuberkulose im Deutschen Reiche, H. Haupt, Ztschr. f. Tuberk., April, 1921, xxxiv, 43.*

Notification of Tuberculosis.—Among an estimated population of 1,730,929 in the administrative county of Lancaster, the number of deaths from tuberculosis in 1920 was 1719 (pulmonary 1323, nonpulmonary 396). The notifications of pulmonary tuberculosis numbered 2084, and nonpulmonary tuberculosis 968. About 70 per cent of all new cases in 1920 were examined by the county tuberculosis officers prior to notification, these patients being sent for an opinion as to diagnosis and treatment. The deaths from pulmonary tuberculosis, not notified in 1920, were 177 and nonpulmonary 122. The deaths from pulmonary tuberculosis within three months of notification were 357. A special inquiry into 163 consecutive deaths, not notified under the regulation, has shown that a large proportion (58) occurred in public institutions, and that many of the nonpulmonary cases were those of meningitis or specially complicated cases; that in the 45 pulmonary cases, 22 were not notified owing to a misunderstanding of the tuberculosis regulations, or to a belief that the cases had already been notified. The regulations direct that a practitioner shall not notify a case, if he has reasonable grounds for believing that the case has already been notified to the medical officer of health for the district within which the place of residence of the person is situated. In view of the liability of error, it would appear much more satisfactory to eliminate the qualification quoted above from the regulations.—*Notification of Tuberculosis Compared with the Reported Deaths from This Disease, G. L. Cox, Lancet, November 19, 1921, ccl, 1072.*

Nomenclature and Classification of Pulmonary Tuberculosis.—A satisfactory classification for pulmonary tuberculosis should (1) be simple and easily reviewed, (2) give the clinical course of the disease, (3) contain the basic anatomic changes, but in such simple form as to be easily intelligible to every practitioner, (4) be columnized for statistical purposes and (5) give undivided attention to a uniform classification, and not use in one place a macroscopic and in another a microscopic condition. This was approached in the following classification and nomenclature of chronic pulmonary tuberculosis fulfilling the first two requirements:

I	II	
1. Progressive...	fibrotic (cirrhotic).....	tuberculosis
2. Stationary....	(acinous) nodose.....	
3. Tending to latency.....	pneumonic (exudative),	
4. Latent.....	(lobar-bronchopneumonic)	

Added to the above scheme for characterizing and tabulating were two more divisions:

III		IV	
Open / Closed	tuberculosis (in the region of) in	right apex (with cavities)	left apex (with cavities)
		right hilum	left hilum
		right upper lobe	left upper lobe
		right middle lobe	left lower lobe
		right lower lobe	

This form of nomenclature orients the clinical course, the anatomic basic character, and the extent, and gives the basis for prognostic conclusions and therapeutic management. It makes possible the testing and critical estimating of methods of treatment, etc., and statistical reviews are easily obtained.—*Zur Frage der Nomenklatur und Einteilung der Lungentuberkulose, A. Bacmeister, Beitr. z. Klin. d. Tuberk., October 23, 1920, xlvi, 20.*

War and Tuberculosis.—An analysis of 143 cases among soldiers was made, dividing them into three types: Group I (54.5 per cent). Cases that could be considered absolutely free from tuberculosis and free from family taint before the war. Group II (35.7 per cent). Cases in which heredity or association with tuberculous individuals played a part. Group III (9.1 per cent). Cases that were manifestly tuberculous before the war, even though slightly so, and were so admitted to army service. The prognosis according to this grouping was good in 62.8 per cent for group II, only 57.7 per cent in group I, and 21.4 per cent for group III. Strenuous activity (autotuberculinization) improved the prognosis most in group I and did not affect one way or the other that in groups II and III. The effect of sanatorium treatment upon prognosis was that 69.2 per cent of group I, 72.5 per cent of group II and 42.9 per cent of group III were improved. It is evident that cases that had an hereditary "disposition," or had been in intimate contact with tuberculosis, showed much better resistance to the disease than those who had never been in contact with it. All of these cases saw active service with its hardships and privations.—*Krieg und Tuberkulose. (Zugleich ein Beitrag zur Tuberkuloseimmunitätsforschung.), W. Schmid, Ztschr. f. Tuberk., February, 1921, xxxiii, 205.*

Influence of War on Pulmonary Tuberculosis in Mannheim (Germany).—This extensive study comprises 2312 cases of the more advanced type cared for by the State Hospital for Tuberculosis at Mannheim. Of these, 783 were open cases; 583 arrested; many of hilum involvement in children; and 944 deceased, of which 629 were autopsied. The total percentage of males admitted before the war during 1912–1914 was 57.9 per cent and of females 42.1 per cent. During the war (from 1915 on) and for the year 1919 the percentage of males dropped steadily, until in 1919 it was 43.6 per cent of the total admissions into the hospital, making the percentage for females in 1919, 56.4 per cent. This rise is ascribed partly to the fact that men were at war for the greater part of this time, partly to the influenza epidemic which worked more havoc among women, and lastly to the fact that many more women were obliged to earn their livelihood during the war and subsequently. There were 53 per cent of females with pulmonary tuberculosis occurring between the ages of one and forty years, and only 47 per cent of males between the same ages for the entire period of 1912 to 1919 inclusive. After forty years of age this condition was reversed, with an incidence of 27 per cent for females and 73 per cent for males. *Occupation*: Fully one-fourth of the women admitted were servants. Other occupations represented were innkeepers, bakers, confectioners, occasionally butchers, salesmen and saleswomen. *Familial infection*: Infection in the father 227 cases, in the mother 239; in the father and one child or more, 89 cases; in the mother and one child or more, 82; in both parents, 58; in both parents and also one or more children, 47 cases. *Habitus*: In 40 per cent of the cases the phthisical habitus was present; in 60 per cent the thorax was normally developed. *Influence of the war on the duration of illness*: The factors of war, blockade, influenza and revolution greatly increased the mortality rate, from 25 per cent to 59 per cent. *Active vs. arrested cases*: The ratio of arrested to active cases before the war was 1:0.9; during the war it rose in favor of the active cases from 1:1.3 in 1915 to 3.3 in 1918. The bad effects of the war persisted in 1919, in which the ratio of arrested to active cases was still 1:2.3. *Complications*: Most important was intestinal tuberculosis. Of the total of 944 deaths, 629 were autopsied, of which 452, or 72 per cent, had tuberculous changes in the intestines. Of the latter, 250 had been clinically diagnosed. Of the active cases, 6.2 per cent had clinical tuberculosis of the intestines in 1912–1914, and 12.9 per cent in 1918–1919. It was noteworthy that a very large number of these presented lesions of a virulent ulcerative type in comparison with the rather milder forms seen prior to the war. *Tuberculous peritonitis*: Occurred in 10 per cent of autopsied cases, and, when smaller nodular masses of previous tuberculous processes are considered, in 25 per cent. In about 80 per cent there was also an intestinal tuberculosis, symptoms often being entirely absent. *Tuberculosis of the mesenteric nodes:* Was relatively frequent, especially in children, of whom 72 were autopsied, practically every one showing a certain grade. In 5 cases the nodes produced pressure upon the vena cava with resulting edema in the lower part of the body. *The liver*: 23 per cent of autopsied cases showed macroscopically a fatty liver; microscopically, there was even a larger number. Few cases of macroscopic tubercle were found, but microscopically nearly three-fourths of the cases examined were positive. Urobilin was found fairly consistently in the urine of such cases. Cirrhosis was rare. *Spleen*: Was enlarged in 70 per cent of cases. *Tuberculous laryngitis*: Occurred in 38 per cent of cases coming to autopsy. In the living active cases it occurred in 13 per cent, in

the arrested in 3 per cent. Not a single case of tuberculous laryngitis without pulmonary tuberculosis was found. In most cases it was a late complication. Not a single case of edema of the glottis, severe enough to require tracheotomy, was encountered. *Pleura*: Extensive thickenings of the pleura, to complete obliteration of the pleural cavity, occurred at autopsy in a remarkably large number of cases (67 per cent). Lime plaques were not infrequent. Tuberculous empyema occurred relatively seldom (1 in 1.7 per cent of all deaths. *Intrathoracic lymph nodes*: Noteworthy were the cases, which occurred, particularly in children, of a very active type in the peribronchial nodes with the lung completely unaffected. These cases were detectable roentgenologically and clinically. In 1 case, a woman of forty, the process spread from the nodes to the pericardium while the lung remained unaffected. In another case the paratracheal nodes broke down and ulcerated into the trachea. The frequency of disease of

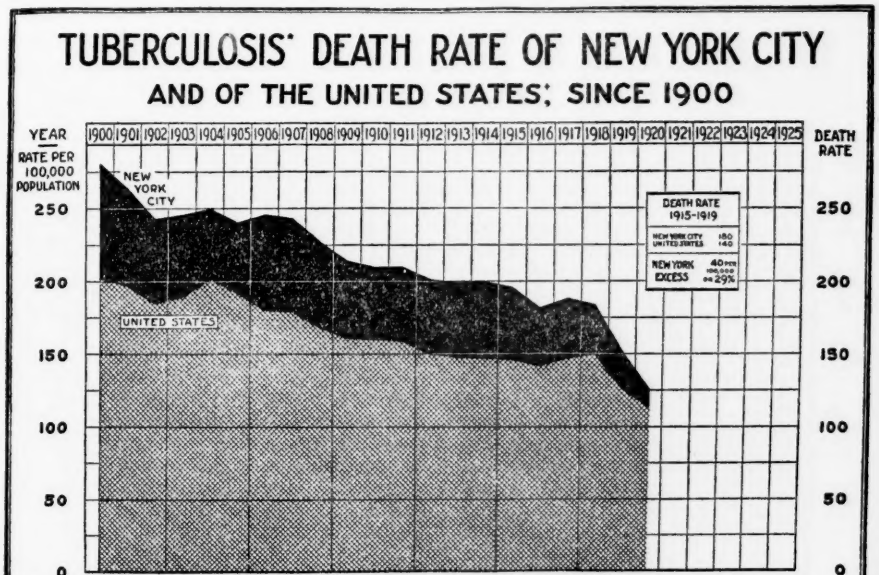

CHART FROM TUBERCULOSIS IN NEW YORK CITY MORE PREVALENT THAN IN REMAINDER OF THE COUNTRY

Bull. New York Tuberculosis Association, December, 1921, ii, No. 5, 7

per cent). *Spontaneous pneumothorax* occurred in 3 per cent of all the cases, producing death in 73 per cent of these, in others occasioning marked improvement. *Hemoptysis* was found to occur in 73 per cent of all cases, during observation and according to the history before entrance to the hospital. Of these, 31 per cent were initial. The war seemed to increase the incidence slightly, from 11.5 per cent in 1912–1914 to 18.5 in 1918–19. Hemorrhage, per se, caused death in 3 per cent of all cases of hemoptysis and the peribronchial nodes seems to have increased during the war. *Heart and vascular system*: Dilatation of one or other ventricle was found in 79 per cent of cases autopsied, of which dilatation of the right ventricle occurred 6 times as often as that of the left or of both ventricles. Hypertrophy of the right ventricle was observed in 4 per cent and of the left in 1. 7 per cent of autopsies. The most typical finding was the small heart, commonly associated with brown atrophy. *Pericardial changes* were

seen in 4 per cent of clinical and in 3 per cent of autopsy cases, consisting of nodular eruptions on the parietal and visceral surfaces—more frequent in advanced cases. In most instances the tuberculous pericarditis is merely an extension from the pleuritis. As a sequela of a previous pericarditis, concretion of the pericardium not easily detectable *in vivo*, was not infrequently found at autopsy. The most frequent condition affecting the vascular system was arteriosclerosis, especially in the aged. Roentgenologically, an apparent dilatation of the aorta occurred rather frequently, due to fibrotic displacement of the heart, fibrosis located along the midline, deviation of the spinal column and also of the aorta. Stenosis of the aorta was found extraordinarily frequently. *Fatal lung emboli* occurred in 0.4 per cent of cases. *Infarcts* in various organs occurred frequently, especially in the spleen and kidneys, and clinically recognized as severe sudden pain in the region posterior to the spleen and as transient hematuria. *Kidneys:* The cases with changes observed at autopsy were very numerous compared with those detectable clinically, that is, in one-third of autopsied cases. Single small nodules were often found in the cortex of the kidney; more frequently (14 per cent) tubercles were found in the medulla, with an occasional large solitary tubercle. Only rarely do these tubercles produce clinical symptoms. Only with extreme destruction of functional tissue is the urinary excretion markedly diminished, blood pressure increased and uremic symptoms produced. Even in cases with manifestly tuberculous kidneys at autopsy, no tubercle bacilli may be found during life. Acute focal glomerulonephritis was relatively frequent, appearing suddenly with hematuria and no increase in blood pressure or edema. The urinary sediment contained many red blood cells mostly hemolyzed, with hyaline or granular casts and generally but few leucocytes. Acute diffuse glomerulonephritis occurred seldom. *Nervous system:* Meningitis occurred in 3 per cent with symptoms often atypical, such as disturbance of speech lasting for a number of days, psychic changes such as euphoria or depression, sometimes urinary retention as a first sign, and paralysis of the ocular muscles or facial paralysis as the only symptom. In about one-third of the cases the spinal fluid was unchanged. In the remainder, the fluid had a yellowish tint, with a fine cobweb-like film and tubercle bacilli in 50 per cent. Neuralgias and rheumatoid and neuritic symptoms, lasting for a few days or weeks, appeared not infrequently with no manifest changes, due apparently to toxic effects. *Prognosis:* A congenitally narrow aorta means a bad prognosis. The urochromogen reaction is useful, prognostically indicating exacerbations or complications. A strongly positive reaction, persisting for weeks, indicates a bad prognosis. The reaction, however, becomes positive in some cases months, in other cases only very shortly, before death, and in 3 per cent of fatal cases the reaction remained persistently negative. It was positive in 6 children with hilum involvement, in 1 with marked weakness, 1 with congenital lues and 1 with complicating tuberculosis of the bones. The methyl green reaction is far less reliable. The diazo reaction, when positive, is of bad omen. It was positive rather rarely and generally only a short time before death. In a few cases the diazo was positive early, namely, in cases with intraäbdominal complications, such as tuberculous mesenteric nodes and tuberculous peritonitis. The diazo reaction is of little value in the prognosis of pulmonary tuberculosis. The urobilin reaction, when positive, indicates passive congestion of the liver and a decompensating heart, and is consequently of bad import. The blood picture is of aid prognostically: when the nongranulated corpuscle forms are greatly diminished the outlook is grave. A lymphocyte count of less than 10 per cent indicates approaching death. A progressive, marked diminution of hemoglobin was found to indicate a bad prognosis. Intestinal and laryngeal tuberculosis and empyema render the prognosis graver. Spontaneous pneumothorax is either of grave, or of more or less favorable import. Individuals with phthisical thorax tend toward the chronic form of pulmonary tuberculosis; those with normal well constructed chests succumb more often to the acute form. During and since the war the chronic fibrotic forms of the disease have diminished in number, and the rapidly fatal acute forms have increased. In Germany the malignant fatal form of the disease is being combated, it being brought about and abetted by poverty following in the wake of the war.—*Statistische u. klinische Beiträge zur Lungentuberkulose, mit besonderer Berücksichtigung der Kriegseinflüsse, O. Kieffer, Ztschr. f. Tuberk., April 20 and June 20, 1920, xxxii, 65 and 129.*

Infectiousness of Bovine Tubercle Bacillus during the War.—There is no question but that the tuberculosis mortality in Germany during the war increased greatly. Whether morbidity increased has not, as yet, been adequately shown. In order to determine this three avenues of approach

were used: 1. Autopsies and clinical studies on man. 2. Autopsies and clinical studies on cattle. 3. Observations of the hygienic milk regulations during the war. 1. *Autopsies and clinical determinations on man:* The available data point to an increase in the incidence of abdominal tuberculosis, but the number of cases examined is not considered sufficient to warrant any definite conclusions on this point. 2. *In cattle slaughtered and examined routinely for tuberculosis* the percentage was found to be less during the war than before, so that the chances for an increase in tuberculosis from this source should not be expected. These statistics were based upon killings in Prussia and throughout Germany mounting into many millions of animals. 3. *Hygienic milk regulations:* Although milk regulations were lax during the war, there was no demonstrable increase in the tuberculosis caused by ingestion. This is accountable to the wholesale slaughter of cattle for war demands, with even more than usually rigid government rejection of all tuberculous carcasses. More chance for infections arose in the consumer's household, where the recommendation to cook raw milk for a short time was probably not heeded because of the scarcity of fuel and the increased amount of work falling upon mothers during the war.—*Hat sich die Infektionsgefahr durch den Typus bovinus des Tuberkelbazillus während des Krieges vergrössert? F. Schaeffer, Ztschr. f. Tuberk., July, 1920, xxxii, 193.*

Pulmonary Tuberculosis in the War Disabled after Sanatorium Treatment.—During three and a half years, up to January, 1920, 345 war disabled soldiers who were taken off active military duty for lung disease were observed. Of these, in 13 or 3.76 per cent, the diagnosis of pulmonary tuberculosis could not be verified (2 cases of fetid bronchitis, 1 of pharyngitis, 5 of neurasthenia, 1 of hysteria, 1 of bronchiectasis, 1 of lung gangrene, and 2 of adhesive pleuritis). The remaining 332 were classified according to Zadek into: 1. Originally well from a pulmonary standpoint (not disabled) and of good prognosis, 106 or 56.38 per cent; unfavorable prognosis, 82 or 43.62 per cent. 2. Originally well (disabled) with favorable prognosis, 22 or 61.12 per cent; unfavorable prognosis, 14 or 38.88 per cent. 3. Previous pulmonary disease (not disabled) with favorable prognosis, 48 or 71.64 per cent; unfavorable prognosis, 19 or 28.36 per cent. 4. Previous pulmonary disease (disabled) with favorable prognosis, 36 or 87.8 per cent; unfavorable prognosis, 5 or 12.2 per cent. The majority of war disabled are considered to be endogenous reinfections.—*Die Lungentuberkulose der Kriegsbeschädigten im Lichte späterer Heilstättenkur, Bochalli, Beitr. z. Klin. d. Tuberk., October 23, 1920, xlvi, 88.*

Increase in Tuberculosis Mortality among Women of Graz.—During 1912–1914, of 100,000 women in Graz, there were 255 deaths from tuberculosis; during 1915–1919 this number rose to 378, or an increase of 47 per cent. In males, in the same city during this period, the increase in deaths was only 16 per cent. According to age and sex the following table shows that the age of greatest mortality for men is that from 30 to 50 years; that for women is from 15 to 30, with the ages from 30 to 50 a close second.

A classification of mortality, according to profession, vocation or employment, shows that a considerable increase occurred in 1918 to 1919 in the mortality from tuberculosis among the class of officials, etc., in the first group, especially among the

	NUMBER OF DEATHS AMONG MALES DUE TO TUBERCULOSIS OUT OF 100,000 NATIVE MALES		NUMBER OF DEATHS AMONG FEMALES DUE TO TUBERCULOSIS OUT OF 100,000 NATIVE FEMALES		PER CENT INCREASE IN MORTALITY IN 1918-19 IN COMPARISON WITH 1912-13	
	1912-13	1918-19	1912-13	1918-19	Males	Females
First year	10.3	4.2	5.0	3.6	−211.1	−28.2
1–5 years of age	19.1	26.9	9.8	17.8	37.5	81.8
5–10 years of age	7.4	20.7	23.4	29.6	182.2	26.5
15–30 years of age	72.0	109.3	82.3	146.1	51.7	78.8
30–50 years of age	122.1	136.9	81.3	114.0	12.1	40.3
50–70 years of age	73.5	96.8	52.9	85.5	31.7	61.6
Over 70 years of age	11.8	11.0	7.4	22.5	− 5.9	204.6

	MEN							WOMEN						
	1912	1913	1918	1919	Average 1912-13	Average 1918-19	Increase per cent	1912	1913	1918	1919	Average 1912-13	Average 1918-19	Increase per cent
1. Officials, professors, physicians, lawyers, notaries, engineers, architects, clergymen	25	16	29	31	21	30	42.7	15	12	36	34	14	35	150.0
2. Merchants	12	12	15	11	12	13	9.3	13	8	10	16	10	13	30.0
3. Salesmen	15	16	10	13	16	12	25.0	8	17	18	9	13	14	7.7
4. Skilled workmen	96	86	116	112	91	119	30.7	75	53	88	123	64	105	64.0
5. Lower officials, clerks	7	86	20	24	8	22	175.0	9	7	20	19	8	19	137.5
6. Sisters, nurses								15	21	27	22	18	25	38.8
7. Servants, domestics	8	13	9	9	11	9	18.2	26	24	42	32	25	37	48.0
8. Day laborers, home workmen, assistants	35	35	40	49	35	45	28.6	23	23	46	39	23	43	86.9

women. The same applies to the fifth class of subordinate officials and clerks. The class of skilled workmen also shows an advance in tuberculosis mortality.—*Über die Zunahme der Sterblichkeit der Frauen an Tuberkulose, Gertrud Müller, Ztschr. f. Tuberk., November, 1920, xxxiii, 77.*

Pulmonary Tuberculosis during Pregnancy.—There is such general agreement that pregnancy, labor and the puerperal state produce grave, often fatal, complications of consumption that it is surprising that some physicians still disagree with the general opinion. Reports of a favorable influence caused by pregnancy on a tuberculosis rest, usually, on a mistaken diagnosis. How frequently wrong diagnoses of tuberculoses are made we learned from the war. An aggravation of pulmonary tuberculosis may be produced by pregnancy, either at its beginning, at some time during its course, or after labor. In 4 cases where tuberculosis seemed to begin with pregnancy it ran a rapidly fatal course and ended before labor at term. In 5 cases where tuberculosis occurred during pregnancy grave, rapidly evolving forms occurred in all. In 5 cases the beginning of a pulmonary tuberculosis was immediately after labor, and in 8 cases the beginning followed labor at intervals of from one to five months. In all these 27 cases the tuberculosis was grave with sudden manifestations, occupying a great part of one or both lungs, producing cavities with great rapidity. The most common type was that of the classical galloping consumption. Laryngeal complications are frequent. It is certain that all tuberculous women who become pregnant, and all pregnant women who acquire tuberculosis are menaced with speedy death. Whether abortion increases the chance of improvement is doubtful. Where the tuberculosis is unilateral a pneumothorax should be made. A number of cases have occurred in which a living child was born and the mother remained well.—*Tuberculose pulmonaire et gravidité, E. Rist, Rev. d. l. Tuberc., August, 1921, ii, 244.*

Colds and Tuberculosis.—Frequent, repeated colds prepare the mucous membranes and the lymphatic system for tuberculous invasion; latent tuberculous processes can flare up after an acute bronchitis; active progressive cases of pulmonary tuberculosis may be made worse; closed cases converted into open ones. Tuberculous individuals not infrequently are hypersusceptible to acute catarrhal inflammations, owing probably to a lowered constitutional resistance, as also to toxic injury affecting the nervous system.—*Über die Beziehungen zwischen Erkältungskatarrhen und der Tuberkulose, Warnecke, Ztschr. f. Tuberk., February, 1921, xxxiii, 220.*

Influence of Sex Glands on Predisposition to Tuberculosis.—Reinfection with tuberculosis, or a flaring up of latent tuberculous infection has often been noticed at the age of puberty, and explained on the basis of a reaction to the sudden stimulation of growth at this age, or the altered mode of living, with its consequent increase in possibilities for infection. The possible influence of the increased activity of the sex glands at this age, however, has never been sufficiently investigated. Mautner injected tuberculous material intraperitoneally into castrated and normal guinea pigs, and observed the spread of the infection. In the first few experiments the castrated animals

seemed to have much more resistance to the infection, being better nourished and showing fewer lesions at autopsy. Later experiments, however, failed to substantiate this result. He concludes that the activity of the sex glands may influence the reaction of the organism to tuberculosis, but that they constitute only one of many factors capable of doing the same thing.—*Geschlechtsdrüsen und Tuberkulose Disposition, H. Mautner, Monatsch. f. Kinderhk., April, 1921, xxi, 38.*

Trauma and Tuberculosis.—Cases are gone into minutely, which tend to show an etiological connection between trauma of the chest and subsequent onset of pulmonary tuberculosis, due probably to a flaring up in the lungs of an entirely latent inactive process.—*Trauma und Tuberkulose, J. Orth, Ztschr. f. Tuberk., November, 1920, xxxiii, 81.*

War Injuries and Pulmonary Tuberculosis.—Twenty-nine cases of war injuries classified as follows were studied: 4 cases of gas poisoning, 2 cases of fall on the thorax, 13 cases of crushing injuries of the thorax. None of the cases of gas poisoning gave any evidence of pulmonary tuberculosis before the poisoning. The development of the tuberculous chest condition could be directly traced to the gas poisoning in one case, the condition developing within four weeks after the gassing. Of the two cases of injury by falling on the thorax, one had had signs of lung involvement before the war but was an arrested case when the war started. A fall from a horse resulted in an early lighting up of the old process. The other case was one in which there developed a dyspnea but no outspoken tuberculosis. Of the 13 cases of crushing injuries of the thorax, 3 developed active open pulmonary tuberculosis and 10 were closed cases. In some of these cases the crushing injury to the chest seems to have caused the development of the tuberculosis lung process.—*Kriegsverletzungen und Lungentuberkulose, H. G. Austgen, Ztschr. f. Tuberk., February, 1921, xxxiii, 274.*

Tuberculosis among China Workers.—Pulmonary tuberculosis has been termed in Germany the "porcelain sickness" and "potters' disease" because of its high incidence among such workmen. Reliable statistics on the incidence of tuberculosis among potters are scarce. The author's tables show that the occurrence of non-tuberculous disease of the respiratory passages among china workers of all kinds is higher than in other workmen not so employed, but the incidence of pulmonary tuberculosis is lower among the china workers than among the other workmen. A pneumokoniosis is common among workers in china and its incidence increases with age and is found to produce some symptoms in a great number of cases. By X-ray and physical examination the condition is also discernible. The condition is found in highest percentage in turners, moulders and in kiln-workers among males (34.03 per cent) and in glaziers among females (22.08 per cent). These are considered the true china workers and the high incidence of pneumokoniosis among them stamps this condition as characteristic of that trade. Another characteristic condition of the trade is a marked pallor found in a large percentage of the professional china workers.—*Keramische Industrie und Tuberkulose, Thiele, Ztschr. f. Tuberk., May, 1921, xxxiv, 303.*

Tuberculosis among Deaconesses.—The statistics here presented were accumulated from data furnished by members of the Evangelical Deaconess Society in Zehlendorf. Deaconesses are found to become tuberculous in no greater percentage than other women of the same range of age. In fully 15 to 30 per cent of those nurses who contracted tuberculosis, the infection could be ascribed to the fact that they nursed tuberculous individuals. The apparent reasons for infection with tuberculosis among these women are (1) inadequate instruction among them; (2) inadequate hygienic conditions in the various sanatoriums; (3) unhygienic methods of handling eating utensils and dishes; and (4) there appears to be a specially virulent type of organism or one of greater infectibility occurring especially in the severe cases of tuberculous laryngitis. Proper isolation of open cases of tuberculosis and adequate disinfection of eating utensils and dishes by boiling should be carried out.—*Tuberkulose Erkrankungen bei Schwestern infolge von Ansteckung im Dienst und ihre Verhütung, H. B. Bracuning, Ztschr. f. Tuberk., December, 1920, xxxiii, 129.*

Tuberculosis in Senegalese Soldiers.—The colonial troops furnished more than half of the invalids in the tuberculosis camps. The Arabs and Annamites had types of tuberculosis familiar in adult whites, but the Senegalese developed a tuberculosis of the respiratory apparatus which, but for the anatomopathological and other laboratory findings, might have passed for a new disease. The early signs were a nodule below or behind the clavicle, discernible only by careful palpation, a little movable node, the size of a pea, generally right, unilateral, found in 70 per cent of cases; skin changes,

first of the extremities, especially the arms, later generalized, with loss of satiny lustre, pallor, desquamation; and loss of muscle tone. A sign which was less frequent, but sometimes was the earliest one observed, was a slight laryngitis. Signs which occurred a little later were cough with slight mucous expectoration, and a subfebrile state before any changes could be detected in the lungs. From this time on several anatomoclinical forms could be distinguished: 1. Progressive adenopathy of the hilum, the most frequent and the most characteristic form. The clinical picture was varied, but the X-ray showed a uniformity in the manner of evolution. Three stages were to be distinguished. First period: Simple tracheobronchial adenopathy. Second period: Progressive adenopathy of the hilum, with intrapulmonary extension, the tumor increasing regularly, especially toward the anterior, producing a movable dulness, first subclavicular, then axillary, then dorsal, the dulness, as a rule, less extensive than the opacity it causes. Signs of adjacent pulmonary reaction also occurred. Third period: Generalized pulmonary signs, caseous bronchopneumonia with extensive opacity and pseudopleuritic symptoms. At the autopsies, generalized polyvisceral lesions were found which were usually not visible on the screen, and, hence, could not be assigned to a precise period. But it is probable that their appearance coincided with the beginning of cachexia, rapid wasting, loss of appetite, albuminuria and gross irregularities of the temperature curve. All these cases evolved rapidly, in three or four months at most, and the condition has been designated by several observers as quick adenopathy. 2. The ulcerocaseous form, which is that of the ordinary pulmonary tuberculosis, was very rare among the Senegalese. It scarcely differs from the usual tuberculosis of the whites, except by its rapid progress. 3. The pleural forms, which were as a rule, tuberculous hemorrhagic pleurisies. They had, most typically, enormous hemorrhagic effusions and a fatal outcome. The evolution was very rapid, six to fourteen weeks; the enormous effusion was rapidly replaced after evacuation; none were observed to become purulent. Signs of generalization (abdominal meteorism, edema) set in some days before death. 4. Rapidly generalized forms comprise those in which a subacute granulitis of all the great serosa follows or coincides with caseous tuberculous lesions of the lymph nodes, the lung parenchyma and the spleen. Peritonitis is the most frequent reaction; pericariditis is less frequent; the articular serous membranes may be attacked, producing a genuine tuberculous rheumatism. Meningitis, cephalalgia, rachialgia or reflex disturbances were not observed. Bacteriological research showed that in 71 tuberculous Senegalese only two had bacilli in the sputum. These two had ulcerocaseous tuberculosis of the ordinary form. The effusions gave regularly the classical lymphocyte picture. The cutaneous reaction to tuberculin showed that, for the Senegalese, the diagnostic value of the reaction is very great, particularly in the adenopathic forms, otherwise so difficult to determine. Tuberculosis in Senegal is rare except in the ports. In 1912 Calmette had cutaneous tests made on the inhabitants of West Africa and found 4.5 to 7 per cent of reactions in villages of the interior and 20 to 30 per cent in the colonized regions. Contact with whites was presumably a factor in the frequency of tuberculosis among the Senegalese troops, which was at least as important as the change in climate and conditions of life. The forms of tuberculosis seen among them are not modes of reaction peculiar to negroes. Those longer in contact with white races react in the usual ways, as, for example, American negroes. The reactions are those of virgin soil and are analogous to the reactions of tuberculosis in childhood. The observations seem to show that the lung becomes tuberculous by contiguity with the adenopathic tumor or through the blood stream and thus they seem to cast doubt on Parrot's law. The anatomopathological lesions observed in the Senegalese recall also the lesions produced by inoculation of guinea pigs and the lesions of spontaneous and of experimental tuberculosis in monkeys.—*De la tuberculose pleuro-pulmonaire des noirs. (L'adénopathie trachéobronchique tuberculeuse à forme rapide), C. Broquet and L. Morenas, Rev. d. l. Tuberc., April–June, 1920, i, 143.*

Progressive Pulmonary Tuberculosis after Thyroidectomy.—In three cases the chest signs were slight until the thyroid was removed. In all three cases the operation was performed because of noticeable obstruction of the trachea with dyspnea. A few weeks after operation progressive pulmonary tuberculosis developed, with rapid fatal issue in two of the cases. The quick onset of tuberculosis is ascribed to the sudden changes produced in the circulation and pulmonary ventilation.—*Progrediente Tuberkulose der Lungen nach Kropfoperationen, P. Clairmont and E. Suchanek, Arch. f. klin. Chir., May 24, 1921, cxv, 995.*

Comparative Gravity of Pulmonary Tuberculosis in Subjects without Tuberculous Antecedents.—Recent observations upon human pulmonary tuberculosis, added to the best established experimental findings, support the belief that all persons who have never been subjected to infection are almost equally receptive to the tubercle bacillus and liable to acquire tuberculosis in dangerous forms and with rapid evolution. If infection remains latent or assumes a benign form this appears to be due, above all else, to the mildness of the first infection, which, however, has been sufficient to create in the organism a relative immunity, protecting it against other infections or mild reinfections, which, if not too frequently repeated, serve to strengthen the acquired immunity. Recent statistics supporting this view are of several sorts. About 2000 tuberculous soldiers examined by von Hayek (*Gesetzmässigkeiten im Verlauf der Tuberkulose, München. med. Wchnschr., 1919*) included 413 subjects which at the time of mobilization were apparently normal and without tuberculous antecedents, and 505 subjects with previous signs of or with a family history of tuberculosis. The pulmonary tuberculosis of these two groups, after long observation, permitted the following prognosis:

	PROGNOSIS		
	Favorable	Doubtful	Bad
	per cent	*per cent*	*per cent*
1st group (subjects without antecedents).....	45.7	20.7	33.6
2nd group (subjects called predisposed).....	49.9	26.7	23.4

The differences, all in favor of the subjects with tuberculous antecedents, are especially striking in the smaller number of cases in which the prognosis is bad. Zadek (*Beiträge zum Verlauf der Lungentuberkulose im Kriege, München. med. Wchnschr., 1917 and 1919*) compared the course of the disease in two series of tuberculous soldiers, one series of 331 without antecedents, the other series of 79 predisposed subjects. The advantage possessed by the predisposed men was considerable. In 81 per cent of non-predisposed subjects the disease ran an unfavorable course against 66.5 per cent in predisposed subjects. Eliasberg (*Die Abhängigkeit Tuberkuloseverlaufs beim Kinder hereditären Belastung, Jahrb. f. Kinderhk., 1919*) found in 500 cases of infantile tuberculosis that the children of tuberculous parents are affected less frequently than others with tuberculous meningitis or miliary tuberculosis; they incline to pulmonary tuberculosis and in children over five this is likely to become chronic and to result in a much lower mortality than in children of nontuberculous parents. W. Krause (*Der Einfluss der hereditären Belastung auf Form und Verlauf der Tuberkulose der Kinder, Arch. f. Kinderheilk., 1919*) observed in 100 cases that in acute forms, rapidly fatal, the children of tuberculous parents furnished a relatively small proportion, only 20 per cent of the meningitis and 47 per cent of the miliary tuberculosis. The relatively favorable course of tuberculosis in the descendants of tuberculous persons depends upon the fact that these patients have had more chances than others of contracting, during infancy, mild infections, which, frequently renewed, have endowed them with powers of resistance against later massive infections. Granting that certain individual differences in resistance exist, these remain secondary to the specific conditions of immunity created by infection and these are individual conditions not transmitted to the species.—*Gravité comparé de la tuberculose pulmonaire suivant l'existence ou l'absence d'antécédents tuberculeux chez les parents, E. Arnould, Rev. d. l. Tuberc., December, 1920, i, 396.*

Pulmonary Tuberculosis in an Infant.—The following case presents points of interest both from the distribution of the lesions and the knowledge of the source of infection. The mother developed a cough in the fifth month of pregnancy and the diagnosis of pulmonary tuberculosis was made. The child was born at full term on February 27, 1921, and was immediately taken away to be looked after by the sister, who lived in a different house. It was taken to the mother nearly every day, but remained in the room with the mother for about ten minutes at each visit. The mother took the baby in her arms, but was careful not to kiss him on the lips. She died from pulmonary tuberculosis on April 19, 1921. The baby, who was first fed on diluted cow's and then on condensed milk, appeared to be wasting, and signs were detected in the lungs. It was admitted to the East London Hospital on May 6, then aged nine weeks. On admission, the weight was 6 lbs., 4 ounces, and the stools were loose and offensive. In the left lung there was a small area of impairment of percussion, below the inferior angle of the left scapula; the breath sounds were higher pitched over this area, but no added sounds

were heard. At the end of two weeks the weight was 5 lbs., 14 ounces. The temperature varied between 97° and 99°F., the pulse rate between 110 and 140 and the respiration between 40 and 50. Diarrhea and vomiting set in and the child died on May 23, 1921. On postmortem examination there was an area 1 cm. square of tuberculous consolidation, partly caseous at its centre, situated on the exterior and posterior surface of the left lower lobe, near the apex of the lobe. From the consolidated area miliary tubercles extended. The caseous mass could be traced into caseous lymph nodes, of a size up to 1 cm. in diameter, in the hilum of the left lung. The right paravertebral and axillary nodes were enlarged. Parenchymatous degeneration was present in the liver. Several doubtful tubercles were found under the capsule of the spleen. The mother's brother and probably her father died from tuberculosis. The source of infection was undoubtedly the mother. The tubercle bacilli gained entrance to the respiratory tract presumably by inhalation and gave rise to a caseating tuberculosis.—*Pulmonary Tuberculosis in an Infant, A. G. Shurlock, Brit. M. J., November 12, 1921, no. 3176, 783.*

Tuberculin Tests on School Children.—The Pirquet test was performed on 1506 school children in The Hague (Holland), and a considerably lower percentage of positive reactions found than the much quoted figures of Hamburger and Monti. The tests were performed in the usual way and the results read in two days; if negative, the test was repeated, using the same technique. Reactions were called positive only if the papule measured 5 mm. in diameter. A delayed reaction (occurring on an average ten days after the test was performed) was found in fourteen cases; and of 220 children with negative first reactions, 17 were positive at the second test. The age incidence of the children with positive reactions was as follows:

	per cent positive
6 years	20
7 years	20
8 years	28
9 years	32
10 years	43
11 years	30
12 years	41
13 years	50

Scheltema, dealing with the less favorable material of a clinic in Groningen (Holland) found a slightly higher percentage of positive reactions, but also much lower than Hamburger's and Monti's figures, namely, at 10–13 years, 57 per cent positive.—*Die Tuberkulinimpfung bei Schulkindern, A. M. Fürstner-Risselada, Monatsch. f. Kinderhk., June, 1921, xxi, 271.*

Tuberculous Adenopathies of Childhood Beginning with Bacillemia.—There are clinical observations, supported by the evidence of the X-ray and by autopsy findings, which are opposed to the classical explanation of the activity of tracheobronchial adenopathies. According to this explanation a chancre of pulmonary inoculation is primary; from this the lymphatics, and subsequently the lymph nodes, are infected. This evolution which is doubtless the most frequent is not the only one. Calmette has shown that the pulmonary lymph nodes may be infected through the intestine, the mesentery or the tonsils. With Grysez he produced a tracheobronchial adenopathy, without previous pulmonary lesions, by means of an inoculation into the conjunctiva. There is also the possibility, rare, perhaps, but nevertheless real, that the infection may occur through a bacillemia. These infantile adenopathies of the hilum may become latent and remain so, or they may be reawakened and become the focus of infection for the tuberculosis of the adult. In 10 cases of lymph node tumors of the hilum, the tumor appeared without previous pulmonary signs and was accompanied by the general reactions of a tuberculous infection. In an eleventh case, that of a child without pulmonary signs, but with a bacillemia characterized by gummata and multiple tuberculous abscesses, there was formed, during the period of observation, a great solitary mediastinal tumor shown on the screen and by X-ray pictures. Autopsy demonstrated the absence of an inoculation chancre. About the hilum were microscopic lesions of various age, but younger than the tumor, the older in the lymph nodes of the hilum, the younger in the lung parenchyma of the hilum. These lesions were apparently propagated by the lymph from the mediastinal tumor and were not a result of the bacillemia. For in that case they would have been much more scattered and would not have been, as they were, localized about the hilum. All the lesions found were in the nodes of the hilum and in the pulmonary parenchyma about the hilum. There were no other alveolar lesions and no lesions in the blood capillaries, from which facts it seems necessary to conclude that a bacillemic adenopathy had inoculated the lungs through the lymphatics. This process evidently took place in three stages: (1) a mediastinal lymph node tumor; (2 microscopic lesions of the hilum lymph

nodes; and (3) very discrete lesions of the parenchyma about the hilum of the right side, under the pleura and with an absence of all lesions in the intermediate tissues. The great mediastinal tumor was evidently a lesion in the same category as the gummata and the cutaneous abscesses, that is, a lesion originating in a bacillemia.—*Les formes actives des adenopathies tuberculeuses du hile chez l'enfant (L'origine bacillémique de certaines adenopathies), H. Mery and L. Girard, Rev. d. l. Tuberc., October, 1920, i, 289.*

Tuberculosis of Children in Germany during and after the War.—*Incidence:* The presence of tuberculosis in 600 children ranging from 1 month to 14 years of age was determined by the Pirquet reaction in 1912–1914; in 658 children in 1914–1916; in 638 in 1916–1918; in 271 in 1919; and in 249 in 1920; with the results recorded in the following table:

AGE	1912-14 (600 children)	1914-16 (658 children)	1916-18 (638 children)	1919 (271 children)	1920 (249 children)
	per cent	*per cent*	*per cent*	*per cent*	*per cent*
1–3 months	0.0	2.4	4.7	0.0	2.9
4–12 months	5.0	7.8	9.4	17.0	4.2
1–2 years	12.0	23.0	26.0	11.0	17.6
3–4 years	32.0	25.0	52.0	29.0	39.2
5–6 years	33.0	50.0	51.5	57.5	47.6
7–10 years	47.0	56.0	43.5	47.0	57.5
11–14 years	56.0	66.0	60.0	63.0	60.4

Of the above children found positive, the following were clinically tuberculous and of these the mortality is likewise recorded in the following table:

AGE	1912-1914		1914-1916		1916-1918		1919		1920	
	Tuberculosis	Died	Tuberculosis	Died	Tuberculosis	Died	Tuberculosis	Died	Tuberculosis	Died
years	*per cent*		*per cent*		*per cent*		*per cent*		*per cent*	
1	100	80	70	77	60	67	75	50	66	50
2–4	50	21	66	58	54	67	55	40	47	12.5
5–6	40	20	35	61	32	45	47	33	70	33
7–10	32	7	32	40	29.5	33	41	36	39	44.4
11–14	28	6	27	14	12	10	14	33	15.4	0

Before the war no infants from one to three months showed infection, whereas their number rose during the years of the war. In 1919 only 16 infants of that age were admitted and the percentage is not to be compared with that of previous and succeeding years. Likewise, there occurred in children from one year of age and up a marked rise in positive Pirquet reactions. The effect of the war is shown to last throughout 1919 and 1920 for almost all ages. As a rule (excepting for infants and the oldest children studied) the percentage of clinically tuberculous children rose during the war; the same holds true for the mortality percentages, which in children from two to fourteen years rose considerably. The years following the war likewise show figures which are higher than those preceding the war.—*Über Tuberkuloseinfektion, Tuberkuloseerkrankung und Tuberkuloseletalität der ersten Lebensjahre vor, während und nach dem Krieg, F. Umber, Ztschr. f. Tuberk., February, 1921, xxxiii, 257.*

Tuberculosis among Children of Stettin (Germany) during the War.—Statistics based upon the mortality from tuberculosis in Stettin per 10,000 inhabitants during 1910, 1914, 1918, 1919, and 1920 are given in the following table:

AGE	1910	1914	1918	1919	1920
years	*per cent*	*per cent*			
2–5	16.0	15.9	36.5	24.4	18.8
6–10	7.9	4.8	15.5	13.9	6.6
11–15	6.3	9.2	12.0	9.8	4.4
16–20	12.0	12.9	36.3	28.8	14.7
21–60	21.5	17.8	32.8	24.1	18.8
Over 60	23.6	15.6	28.8	28.8	13.5

A comparison of the increased tuberculosis mortality during the war is seen by comparing the rise in mortality percentages of two German cities from 1910 to 1918 with that of Holland, a nonbelligerent:

AGE	KÖNIGSBERG 1910–1919	STETTIN 1910–1918	HOLLAND	
			1910–1913	1914–1917
years	*per cent*	*per cent*	*years*	*per cent*
1–5	106.5	128	1–4	12.7
5–15	42.6	82	5–13	7.2
5–20	132.5	202	14–19	19.6
20–60		53		
Over 60		22		
Average	43.0	60		

Hence, it is evident that among children and adolescents the increase in mortality

during the war was greater than among adults, and that for the small children the increase was more than 100 per cent, for children of the school-age more than 50 per cent, and for adolescents 200 per cent. The reason for this rise in mortality must be attributed to the fact that during the war many mothers, owing to duties outside of the home, could not properly nurse and care for their offspring. The increase in mortality among adolescents is ascribed to their replacing the men gone to war. Among adolescents of 15–20 years in Stettin, there was found 62 per cent with familial tuberculosis, which is double the average of all ages. Suggestions for combating tuberculosis in the young are to further bodily strength, advise them regarding occupation, medical supervision, proper prophylaxis against tuberculous individuals in their homes, and, finally, proper nursing care and prophylaxis for infants and small children.—*Über die Tuberkulose der Kinder und Jugendlichen nach den Sterblichkeits-Ziffern der Kriegsjahre, F. Ickert, Ztschr. f. Tuberk., April, 1921, xxxiv, 7.*

Tuberculosis in Children.—One of the main sources of childhood infection for children is expectoration in the streets, from which children obtain the germs on their shoes. The law prohibiting spitting on the sidewalk, in force in many American cities, is commendable. No such law exists in any German city.—*Bekämpfung der Tuberkulose in Kindesalter, Petruschky, Centralbl. f. Bakt., February 28, 1921, lxxxv, 35.*

Epituberculous and Gelatinous Infiltration of Lungs in Children.—In a former contribution the authors described a form of chronic lung change in children to which they gave the name *epituberculous infiltration*, and expressed the opinion that the lesion represented a chronic nontuberculous or nonspecific process occurring in a tuberculous child. It is characterized by the presence of an extensive area of dulness and bronchial breathing with few or no râles, and absence of tubercle bacilli in the sputum. The roentgen ray shows a dense homogeneous shadow corresponding to the dull area. The disease is insidious in onset, runs a chronic course of many weeks or even months, and ends in complete recovery, the roentgenogram showing no evidences of the former process, except a packet of enlarged hilum glands. The present paper attempts to establish the differential diagnosis between this and other chronic lung processes, particularly the so called gelatinous tuberculous infiltrations which show a similar roentgen picture. Gelatinous pneumonia represents the first stage of a cheesy pneumonia, and always presages a fatal outcome, usually within two or three months. The three important characteristics of gelatinous pneumonia never seen in epituberculous infiltrations are sudden, stormy onset with high fever, the presence of tuberculous foci elsewhere in the lungs and the finding of tubercle bacilli in the sputum. In two cases of epituberculous infiltration there was a well marked leucocytosis with normal differential count, whereas in cheesy pneumonia the leucocytosis is due chiefly to increase in the polynuclears. Epituberculous infiltration can be differentiated from chronic fibrous tuberculosis (much rarer in children) by the roentgen picture, which is much less regular and homogeneous in the latter. From chronic bronchopneumonia it may be recognized by the history, course and the presence of râles in bronchopneumonia.—*Zur Klinik der epituberkerlösen und gelatinösen Infiltration der kindlichen Lunge, Helene Eliasberg and W. Neuland, Jahrb. f. Kinderhk., 1921, xciv, 102.*

X-Ray Course of Childhood Tuberculosis.—Consecutive X-ray pictures on children presented characteristic findings regarding the outcome of these cases and are given in 14 typical detailed protocols with roentgenographs. Cases 1 to 3 were early, one revealing a broadened diffuse hilum shadow. Case 1 had the poorest and case 3 the best defined shadow. In case 2 the shadow was more differentiated, with a spear-shape protrusion lateral into the pulmonary tissue (probably a small interlobular exudate between the upper and lower lobe). The findings after 4–5 years were characteristic. The diffuse shadow has disappeared and there remain sharply differentiated and demarcated shadows, without question indicating healing processes. This is in entire agreement with subjective and clinical findings. The diffuse shadows were probably not tuberculosis but merely inflammatory reactions. Cases 4 and 5 were fatal cases (within a few months to a year) and the sharply defined shadows were remarkable. Severe clinical findings were obtained in these cases. Case 6 differed in that 2 distinct shadows were obtained with marked clinical symptoms. After 4 years the shadows had a distinctly defined configuration. Cases 7 and 8 showed a dense widespread shadow in the upper lobe clearing within two years, another two years subsequently leaving only differentiated strands, and further regression (peribronchial strands) another two years later.

These cases illustrate how rapidly tuberculous changes can retrogress in children. In cases 9 to 13 the tuberculosis involved the lung tissue from the bronchial nodes in an eccentric fashion and these cases are prognostically less favorable. Cases 9–11 healed, and this is shown in the regression of the shadows. Cases 12–13 progressed unfavorably, and the shadows spread into the lung tissue, but when temporary improvement occurred the shadows became smaller and better defined, with eventually an increase associated with progress of the disease. Case 14 is not a case of tuberculosis but one of trauma, due to an inhaled piece of bone, presenting hilum shadows easily confused with tuberculosis, but rapidly clearing after removal of the foreign body. Roentgenographs can reveal changes in the lungs not appreciated clinically, and early tuberculosis in childrren, even if fairly widespread, can completely regress, leaving slight scars. They also are a good gauge as to the value of and progress attained with treatment.—*Beiträge zum Verlauf der Kindertuberkulose im Röntgenbild, O. Becker, Beitr. z. Klin. d. Tuberk., November, 1920, xlv, 391.*

Prophylaxis of Tuberculosis in Children.—The subcutaneous method of tuberculinization, advocated by Roepke and Bandelier, was found unsuitable for ambulant patients, and was also found to be difficult to administer properly. The vaccination method of Ponndorf was not found satisfactory, owing to the difficulty of determining how much of the tuberculin was absorbed through the abrasions on the skin of the arm, and thus arose a danger of excessive tuberculin administration. The percutaneous method of Koch-Petruschky was found to give excellent results. In 1918, of 64 children so treated, 55 showed an increase, within four months, in weight; 6 children remained unimproved and 3 lost in weight; and the latter died subsequently. In 1917, 45 children received tuberculin by inunction, of which 38, or 84.5 per cent, were evidently improved. It was noticed, too, that during the winter months fewer children suffered from colds and bronchial conditions than before the administration of tuberculin.—*Tuberculosebekämpfung durch vorbeugende Kinderfürsorge, C. Jaenicke, Ztschr. f. Tuberk., February, 1921, xxxiii, 265.*

Bovine Tuberculosis.—The material forming the basis of this report was derived from a central clinic in a large industrial county borough and from a series of smaller clinics. The total population of the area exceeds 200,000. The cases analyzed were drawn from records of 4000 individuals examined. Approximately 50 per cent of these were diagnosed as suffering from tuberculosis; about 10 per cent or 400 persons, showed evidence of nonpulmonary tuberculosis. Of these, tuberculous cervical adenitis was the predominant type. Of 331 cases, 217, or 65.5 per cent, gave no history of tuberculosis in the family; 86, or 25.9 per cent, gave a history of tuberculosis in near relations, and 28, or 8.4 per cent, in more remote relations. The possibility of family contact in the two large groups of glandular and bone and joint cases are very similar. Of the 250 cases of open pulmonary tuberculosis there was no family history in 126, family history in a near relative in 105 and in a remote relative in 19; constituting 24.2 per cent for glands of the external group, 26.7 per cent for joints, and 25.9 per cent for the 331 cases of other "tuberculous disease." The figures given suggest that the family histories of cases of tuberculosis, if taken in sufficient number, would constitute valuable collateral evidence of the extent of bovine infection. The lower the figure of positive family history in a near relative, the more likely are the lesions to be of bovine origin. More investigations by tuberculosis officers into the family histories of cases of tuberculosis might prove of great value in indicating the probable extent of bovine tuberculosis in the districts with which the officers are concerned, the extent to which it may vary in one district compared with another, and the relative proportions of cases of human and bovine tuberculosis found in districts of different types, as, for instance, in purely industrial compared with purely agricultural regions. This paper makes it clear that contact infection is not so common in cases of "other tuberculous disease" as in pulmonary infections. There must, therefore, be some other factor at work in these cases.—*Bovine Tuberculosis; the Etiological Support of Family History, E. H. R. Harris and R. S. Williams, Jour. Hygiene, October, 1921, xx, 132.*

Obscure Lesions in Bovine Tuberculosis.—In the routine inspection of the carcasses of cattle, atypical lesions may appear, necessitating a microscopic examination of the suspected tissue. One carcass showed, in addition to the usual visceral lesions, large and small tumors in all the muscles, proved by laboratory examination to be tuberculous. Lymph nodes invaded by parasites may simulate

tuberculosis. Tuberculous joints are seen; but caution should be used in differentiating other inflammatory lesions of the joints, especially in the femorotibial region. Nontuberculous inflammation of the serous membranes may be confused with tuberculosis, and vice versa. Primary tuberculous lesions may be found in a regional lymph node or in nodes draining a hide lesion, in the nodes of the head or cervical region, the posterior mediastinal nodes, between the caudal lobes of the lungs, the inguinal nodes of bulls and mammary nodes draining the udder, mesenteric nodes and in bone structures, especially the dorsal region of the vertebral column. In case the animal has reacted positively to tuberculin and there are no visible lesions, specimens taken for laboratory examination should include the mesenteric lymph nodes adjacent to the ileocecal valve and any enlarged, engorged or hyperemic nodes. Fat necrosis in the body cavities, certain bone necroses and lime deposits near the sternum and ilium must be differentiated from tuberculosis. Hide lesions appear to be restricted geographically to states north of Virginia, especially those near the Canadian line. The lesions appear where injuries have been received, the fore and hind legs being the usual sites. The underlying muscle may also become involved. The nature of hide lesions often is not clear and the diagnosis should be confirmed by laboratory examination. The frequency with which obscure lesions are discovered justifies the extra time and labor entailed in the search.—*Obscure Lesions in Tuberculosis, C. C. Conley, Am. J. Vet. M., 1921 lx, new series, xiii, 191.*

Control of Bovine Tuberculosis.—In attempting to control bovine tuberculosis efforts should be directed toward providing for cattle an environment free from sources of infection. In establishing a tuberculosis-free herd the intracutaneous tuberculin test was used. Standards of interpretation were as follows: Any circumscribed swelling the size of a pea (three-sixteenths of an inch in diameter) or larger, or a diffuse swelling, giving the inoculated fold a thickness of two or more times the normal thickness of the fold, was considered a definite reaction. Any appreciable thickness less than above was classified as indefinite or suspicious. In testing 670 cattle, it was found that in young animals the reaction was definite at the first reading, while in adult animals the reaction may be delayed. Therefore, two readings should be made, the first between the forty-eighth and seventy-second hours, and the second at the one hundred and twentieth hour. If only one reading is possible, it should be made at the seventy-second or the ninety-sixth hour. The indiscriminate slaughtering of animals reacting positively to tuberculin is not recommended unless the percentage of such animals is low. No single method of tuberculin test can be depended upon to discover more than about 90 per cent of the tuberculous animals in an extensively infected herd. Definite recommendations are made for the elimination of tuberculosis in the tested herd and for the establishment of a new herd free from the disease.—*Notes on the Control of Bovine Tuberculosis, J. Traum and S. Lockett, Am. J. Vet. M., 1921, lx, new series xiii, 186.*

Tuberculosis Antigens in Milk of Tuberculous Cows.—Intracutaneous injections of milk from tuberculous cows were made in children giving positive tuberculin reactions and showing clinical evidences of tuberculosis. The test was performed with 0.1 cc. of milk, and the result observed in 24–48 hours, as in the intracutaneous tuberculin reaction. Of 35 injections with milk from tuberculous cows (26 of which had pulmonary tuberculosis and 9 positive tuberculin tests but no clinical tuberculosis), 18 positive and 3 doubtful reactions were noted. Of 13 injections with milk from apparently sound cows (no tuberculin tests), 4 were positive. In 10 instances, milk from cows with negative tuberculin tests was injected, no positive results being observed. Three injections of a preparation of dried milk were also negative. Moreover, milk of tuberculous cows which gave positive intracutaneous tests in tuberculous children, failed to give a reaction in children with a negative Pirquet test. Positive milk reactions caused a flaring up of old or mild Pirquet tests, although milk from sound cows was without effect in this regard. On the basis of these experiments, it is concluded that the milk of tuberculous cows frequently contains tuberculosis antigens which are not present in the milk of nontuberculous cows. This fact may be of some importance in future studies on immunotherapy.—*Tuberkulöse Antigene in der Milch tuberkulöser Kühe, B. Epstein, Jahrb. f. Kinderhk., 1921, xcv, 64.*

Hogs as Experimental Animals in Tuberculosis.—It was possible to produce a merely localized tuberculosis, namely, of the lymph nodes in cattle; but this was not possible when hogs were injected intramuscularly with 0.02 mgm. of bovine tubercle bacilli of moderate virulence; for when these animals were slaughtered 4–6

weeks after injection they showed generalized tuberculosis. The hog is a very suitable experimental animal for the study of the spread of tuberculosis along the various lymph channels.—*Beitrag zur Bedeutung der Fleisch und Milchnahrung als Ursache fuberkulöser Infektionen, C. Titze, Centralbl. t. Bakt., February, 1921, lxxxv, 23.*

Myocardial Tuberculosis in Guinea Pigs.—A series of animals that had been injected with 0.001 mgm. of virulent human tubercle bacilli, and sectioned after six to eight weeks, revealed the usual tuberculous findings in the lungs, liver, inguinal lymph nodes and spleen. The heart showed no macroscopic tuberculous lesions. In microscopic sections of the heart, however, especially in those from animals dying spontaneously, tuberculous foci were visible in the endothelial lining of almost all sections. The papillary muscles contained many of these foci. There were, besides this, many diffuse foci in which the normal myocardial structure had disappeared. The muscle fibres were swollen and partly degenerated, and the nuclei of the muscle fibres were shrunken and showed karyorrhexis. Between these muscle fibres were found small aggregations of round cells with dark nuclei. The bacilli were numerous in these diffuse foci of necrosis. A second form of myocardial tuberculous change occurred, which was more circumscribed in character. Typical tubercles with epithelioid cells, but no giant cells, occurred, containing invariably tubercle bacilli, but only in very small numbers. The portal of entry to the myocardium is undoubtedly through the coronary vessels because their smaller ramifications showed lymphocytic infiltrations.—*Über Myocardtuberkulose beim Meerschweinchen, R. H. Jaffe, Ztschr. f. Tuberk., April, 1921, xxxiv, 334.*

Bacillus Pseudotuberculosis of Rodents.—Seven strains of this organism were examined for the presence of flagella; 3 showed an extrapolar flagellum or possibly an extrapolar tuft, between the end and middle.—*Zur Morphologie des Bact. pseudotuberkulosis rodentium (Preisz), L. and N. S. Plasaj, Centralbl. f. Bakt., July 8, 1921, lxxxvi, 468.*

Pseudotuberculosis in Guinea Pigs.—There was found a bacillary form, serologically similar to B. paratyphoid B, and culturally and morphologically intermediate between B. pseudotuberculosis rodentium and B. paratyphoid B. This organism (Bact. pseudotuberculosis var. coloniensis) was isolated from the lesions found in guinea pigs, which died in epidemics and manifested lesions in the liver and elsewhere in the abdomen which macroscopically resembled tubercles.—*Zur Frage des Erregers der Meerschweinchenpseudotuberkulose, K. Klein, Centralbl. f. Bakt., August 10, 1921, lxxxvi, 564.*

Turtle Tuberculosis.—Friedmann's turtle tubercle bacilli are specific for that animal. Attempts to infect warm-blooded animals (calf, sheep, guinea pig and goat) were unsuccessful. They were readily cultivated at both room and incubator temperature on the usual culture media.—*Zur Frage der Schild-Krötentuberkulose, R. Machens, Centralbl. f. Bakt., March 15, 1921, lxxxvi, 28.*

Tuberculosis of the Pigeon.—It is known that tuberculosis of the common fowl is much more frequently found in the liver and spleen than in other organs; that this disease is produced by the avian form of tuberculosis; that other birds and some mammals are susceptible to experimental inoculation with avian tubercle bacilli; and that the pigeon and guinea pig are probably less easily inoculated than are the fowl and the rabbit. Statistical data are given for the relative extent to which the various organs of 940 Columbidae were infected with tuberculosis or with a macroscopically similar infection. Bacteriological examinations of these infections were not made; but there can be little doubt that most of these were cases of infection by avian tubercle bacilli. Four of the five groups examined show that the spleen and liver alone included about two-thirds of the total number of the obviously infected organs of the body. In the common pigeon, the liver, spleen, joints and lungs were found to be infected in the order named. The organs most often infected are apparently also the most intensively or extensively infected organs. It is suggested that since the order of infection of organs in common pigeons is essentially the same as the order in which the organs of these birds remove intravenously injected bacteria, as shown by Kyes, there is some sort of causal connection between the two facts.—*The Incidence of Tuberculosis in the Various Organs of the Pigeon, O. Riddle, Jour. Infect. Dis., November, 1921, xxix, 544.*

Clinical Types of Adult Tuberculosis.—Pulmonary tuberculosis in the adult is fully considered and discussed in detail. Instead of Ranke's three patho-

logical anatomic divisions, these are grouped into two as being important: on the one hand, localized phthisis (*isolierte Phthise*) and, on the other, generalized tuberculosis (juvenile pulmonary tuberculosis). The former runs a purely local course with predominantly local symptoms, especially initially, while the latter is more general in nature and reveals systemic effects. When systemic symptoms arise in localized phthisis, they are more to be attributed to actual lung destruction. In 94 open cases of pulmonary tuberculosis, the course of the disease, the type of onset, the character of temperature and various other details are considered from an analytical standpoint. The juvenile form is characterized by a predominantly glandular affliction, with especially the possibility of multiple foci. The prognosis in solitary phthisis is always to be disputed, but usually it is a progressive condition, while the juvenile form in spite of its unpleasant symptoms, is not progressive. In the sanatorium, the solitary phthisis case benefits from the treatment, while the juvenile case shows only slight improvement at best.—*Klinisch-diagnostiche Zweiteilung der chronischen tuberkulösen Lungenkrankheiten des Erwachsenen. (Isolierte Phthise und juvenile Lungentuberkulose), Julius Hollo, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 493.*

Anatomical Anomalies in Tuberculosis.—Numerous constitutional anomalies described by various authors are accumulated, with the conviction that in such studies we tend to approach more closely to the solution of the problems of disposition and immunity in tuberculosis.—*Konstitutionelle Anomalien bei Tuberkulose, K. Eichwald, Ztschr. f. Tuberk., April, 1921, xxxiv, 17.*

Relationship between Pathological Anatomy and Clinical Picture of Pulmonary Tuberculosis.—In order to ascertain the actual pathologic-anatomic condition present in the chest in life the three main aids, namely, physical, roentgen and sputum examination are discussed.—*Pathologische Anatomie und Klinische Forschung der Lungenphthise, S. Gräff, Ztschr. f. Tuberk., May, 1921, xxxiv, 174.*

Pathology of Tuberculosis in War.—This is a statistical study of over 5,000 autopsies, of which more than 1,000 were war prisoners. Autopsies on German soldiers showed 2.3 per cent of advanced cases in various forms; the war prisoners showed an incidence of 8.1 per cent. This greater incidence is ascribed not to the conditions of German prison camps, but to less care in selecting soldiers in alien countries as shown by the following figures: Russians, 12.2 per cent; Italians, 4.2 per cent; French, 5.2 per cent; English, 2 per cent; Roumanians, 0 per cent; Americans, 0 per cent. The forms of tuberculosis which were the cause of death were as follows in 187 fatal cases: pulmonary, 91; generalized miliary, 44; meningitis, 32; pleural, 7; tuberculosis of several organs, 4; peritonitis, 3; urogenital, 2; Addison's disease, 2; intestinal, 1; and bone, 1. Some had more than one type of lesion, but only the immediate cause of death is mentioned. It is noteworthy that only 5 were of the slow fibrotic type of pulmonary disease. There were 25 cases of laryngitis, all also afflicted with pulmonary tuberculosis. Of the pulmonary cases 44 died of caseous pneumonia. Many of the pulmonary cases must, according to pathological appearances, have existed before the war. Of 45 of these cases of the acinous type (Aschoff's classification) 33 were prisoners of war. On the other hand, of the 44 cases of the acute miliary type, 36 were German soldiers who had been at the front for over three years, and only 8 were war prisoners. Like the acute miliary type, the meningitis cases predominated in the soldiers on active duty at the front; that is, 24 cases were all of the acute, rapidly fatal type. The primary focus in these cases was in 11 a chronic pulmonary, in 4 a "primary tuberculous complex" of the lung, in 5 caseous bronchial nodes, in 3 caseous mesenteric nodes, in 3 bone tuberculosis, in 2 urogenital tuberculosis and caseous adrenals, in 1 conglomerate tubercle in the brain, and in 1 the primary focus remained undetermined. Pleural tuberculosis did not cause death, but was accompanied by other conditions, which more than the actual tuberculous condition, occasioned death. Such conditions were cardiac dilatation, passive congestion, thrombosis, pulmonary edema on the unaffected side, lung embolism and empyema (one case only). In all cases of pleurisy the primary focus was a caseous bronchial node. Of the 3 cases of tuberculous peritonitis, 2 were present in war prisoners. Both had tuberculous pleurisy, and caseous thoracic and abdominal lymph nodes. One case of urogenital tuberculosis had its primary focus in the lung with both apices and nodes at the hilum (right side) involved. The left kidney was tuberculous; the corresponding ureter and bladder, the left seminal vesicle, left spermatic cord and left testicle were all caseous. In the typical cases of Addison's disease both adrenal glands were caseous.

Both manifested pleural disease with caseous bronchial nodes; and one had in addition fibroid apices. The negroid skin was present in both cases. The only uncomplicated bone tuberculosis died during an operation for an intercurrent condition. The case in which intestinal tuberculosis was the direct cause of death showed an extensive involvement of the intestines and an early peritonitis. The contrast between the types of tuberculosis among the civilian population and those found in fighting men is well seen in the following table, the civilian figures being taken from those compiled at the Pathological Institute of Düsseldorf in 1919:

	TOTAL NUMBER OF DEATHS FROM TUBERCULOSIS	ACUTE MILIARY TUBERCULOSIS	TUBERCULOUS MENINGITIS	ACUTE TUBERCULOUS CASES	PER CENT
Soldiers at the front	197	44	32	76	38.5
Soldiers in camps	216	43	24	67	31.0
Pathological Institute, Düsseldorf	61	1	3	4	6.5

The fact that the incidence of acute forms of tuberculosis was as large practically in the camps as in the more active and exposed troops is explained by the fact that the men in the camps were not so rigidly selected as those at the front. It was evident from the pathological findings that the great majority of cases of acute tuberculosis were contracted in the war and were not exacerbations of old or latent processes. Other diseases which either hastened or actually lighted up an acute tuberculosis were dysentery in 2 cases, typhus in 1, and grave intestinal catarrh of an undetermined nature in another. The above study does not include the cases affected by the pandemic of influenza in 1918. The impression is that this condition had a comparatively slight unfavorable influence upon the course of tuberculosis. War injuries, such as gunshot wounds, thus inducing infection and other complications, lowered the resistance in three cases, leading to a fatal termination from the existing tuberculosis. War injuries brought on a fatal tuberculosis in only a small percentage of cases.—*Pathologisch-anatomische Beobachtungen über fortschreitende Tuberkulose im Heere während des Krieges, H. Beitzke, Ztschr. f. Tuberk., September, 1920, xxxii, 329.*

Histological Bacilloses in Pulmonary Tuberculosis.—Of 76 cases of pulmonary tuberculosis 61 gave evidence of the presence of bacilli in other organs, in 19 cases the bacilli were found and in 42 others inoculation into guinea pigs gave positive results; 32 kidneys were examined with 26 positive; 8 livers with 6 positive; 8 spleens with 7 positive; 8 suprarenals with 7 positive; 4 pancreases with 1 positive; 6 intestines, all positive; 1 mesenteric lymph node, positive; 2 peritoneums, 1 positive; 2 veins with phlebitis, 1 positive; 5 nervous systems, 4 positive. Clinically, the distribution of bacilli to other organs is not usually manifest by any special sign. The kidney may be an exception, and persistent albuminuria, even when slight, is significant. If it is transitory it indicates usually, but not always, a bacillary discharge without ulterior consequences, which may leave scars or fibroses from which guinea pigs can be infected. But even when the albumin has been considerable the scars may contain no bacilli. Clinical symptoms coming from other organs may also be absent or without significance. The lesions found at autopsy are most diverse and often of the ordinary sort. At times the organs appear healthy and only systematic inoculation into guinea pigs proves the contrary. The lesions are generally moderate. The kidney often has small fibroses, from the size of a flaxseed to a bean, microscopic necrotic foci, larger or smaller cysts, flattened scars at one of the ends or on one of the faces, and microscopic tubercles containing bacilli. Of all these formations the fibroses are the most frequent: some kidneys are riddled with them. They sometimes attain a size which permits a thorough histological verification of their nature and origin. The small ones often have a central caseous part and structure resembling giant cells which appear to be formed from the uriniferous tubules. In the region of these alterations occur lesions of glomerular nephritis with congested blood vessels, diffuse sclerosis about the straight tubules, some of which contain hyaline cylinders, and most of which are desquamated. At times, in the vicinity of the vessels, the connective tissue proliferates, forming islets in the parenchyma. Some kidneys show only a more or less diffuse sclerosis of the pyramids that may be limited to the apex. Histological bacilloses are far more frequent in the kidney than in other organs. The liver may appear normal or be atrophied or hypertrophied. Besides

ordinary congestive lesions there may be new formations composed of embryonal cells and yellow connective tissue which contain bacteria in variable numbers. The new formations may surround or penetrate the lobules; they may form thick bands with a lobule at the centre. The spleen also may appear normal or may be atrophied or enlarged. The suprarenals are generally enlarged. They may appear healthy and yet infect guinea pigs. The pancreas always appeared normal. The intestine shows conspicuous lesions, granules on the external wall, thickenings containing minute caseous cavities with bacilli. The nervous system shows lesions varying in different regions, sometimes presenting bacilli, or, in their apparent absence, infecting guinea pigs. The evolution of all such lesions may vary. At times they become completely extinguished and hence apparently identical lesions may or may not infect guinea pigs. A more puzzling observation is that organs apparently healthy may contain bacilli. It seems that, from the point of view of distribution, in these cases the bacteria may behave in different ways: they may invade an organ and live there as saprophytes, either because of the permanent or transitory immunity of the organ, or because of some unexplained intrinsic quality of the bacilli; they may produce discrete lesions without a strong reaction in the infected organ; or they may produce diffuse generalized reactions which end in a surgical tuberculosis. These lesions, extremely polymorphic, have the general characteristics of nonfollicular tuberculoses. In the kidneys where they are the most frequent they seem to originate through the blood-lymph path and in general to arise as infarcts due to vascular thrombosis. Fibroses vary in size according to the size of the embolized vessel; if the bacteria are very virulent they produce microscopic necroses; if the embolism occurs in the region of a tube a cyst is the consequence. These histological bacilloses appear to be the result of a series of successive infections produced by repeated bacillary embolisms. They are thus related to bacillary septicemia, the results varying with the immunity of the organ; if immunity is complete the bacilli may be eliminated in the case of the kidney and liver, or survive as saprophytes in the case of closed organs; if immunity is partial the various lesions constituting histological bacilloses are produced. These results depend on the circumstance that successive infections have produced states of immunity which vary with the different organs and also in the same organ at different times. That is to say, the organs are in a state of humoral allergy and it is this that explains the absence of symptoms. Since allergy signifies a relative immunity to small doses of bacilli and a hypersensitiveness to large doses we may understand that massive infection may produce such diffuse lesions as hemorrhagic nephritis, or extensive severe congestion of the lungs. Thus we may explain the unexpected death of patients who so frequently succumb without an acute terminal syndrome. These histological bacilloses are also examples of superinfection, as is illustrated in the histological reports of cases with microscopic caseous renal and hepatic degenerations, and lesions which constitute genuine tuberculous cavities of the large intestine. These and lesions described in the spleen and the cord represent attempts to eliminate the bacteria as foreign bodies by means of suppuration and necrosis of tissues.—*La diathèse bacillaire et les bacilloses histologiques, E. Lenoble, Rev. d. l. Tuberc., December, 1920, i, 367.*

Psychopathology of Pulmonary Tuberculosis.—In general, the mental reactions of the phthisical patient may be said to indicate a reversion to the infantile type, and such suppression or modification of these as may have resulted from environment and education is largely abolished. While many become introspective, selfish, egocentric, weakwilled and lacking in selfcontrol, not a few become morally stronger as the result of the selfabnegation called forth in the long course of the disease. It is still an open question whether these changes are to be regarded as a result of the debilitating effects of the disease, or as consequent upon the specific action of the endotoxins of the bacillus tuberculosis. There is at times a species of mental exaltation, with an added keenness of intellect, for which no adequate explanation has been offered. In those of literary and artistic attainments, this psychic and mental excitation has been found to occur in marked degree. There can be little doubt that in some remarkable manner, enhanced productivity, quickened intellect and imaginative power have marked the track of the tubercle bacillus in such persons. With the exception of the functional neuroses, there is no disease in which susceptibility to suggestion is so high as in pulmonary tuberculosis. The first illustration is that of autosuggestion seen in certain advanced cases, where the patient "feels splendid" and is engrossed about plans; the second is a simple explanation of heterosuggestion in the case of a patient who has been under treatment by tuberculin, in whom the subcutaneous injection of sterile water is followed by a febrile reaction iden-

tical with that produced by the administration of tuberculin. Conditions for which psychotherapeutic treatment might be advantageously employed in phthisical patients are the reversion to infantile mental reactions. Reëducation of their will is necessary; fear of hemoptysis may become almost an obsession; dyspepsias of a functional character, inability to take certain essential articles of diet, and sometimes insomnia and cough, come within the scope of treatment, by psychotherapeutic means. Pulmonary tuberculosis is above all a disease requiring individual treatment. Reëducation of the mental side is of no less importance than of the physical side. Psychotherapy and in certain cases psychoanalysis should be instituted.—*The Psycho-Pathology of Pulmonary Tuberculosis with Special Reference to Treatment, D. G. M. Munroe, Lancet, September 10, 1921, cc, 556.*

Apical Percussion Findings in Scoliosis.—Percussion findings in typical cases of scoliosis are discussed, especially those essential to a differential diagnosis from apical tuberculosis. The limitation of the percussion field was conspicuous on the convex side of the curvature and respiratory expansion at the base on the convex side was also limited, being 1 cm. on the convex and 4 cm. on the concave side posteriorly. Percussion of Kroenig's apical fields posteriorly revealed not only heterotopy on the side of the convex curvature but the opposite side lay nearer the spinal column, although the fields were equal in size. If the fields are percussed out anteriorly, in the fossae supraclaviculares, the findings are to a certain extent reversed. For differential purposes, the normal width of the fields, the fairly sharp limitation, and the uniform location of the dulness speak against a pulmonary process. In complicated cases, Alexander's suggested percussion of the 7th cervical and 1st dorsal vertebrae, giving a tracheal resonance, diminishing at the 5th to 7th dorsal vertebrae to a pulmonary resonance, is of value.—*Über die perkutorischen Spitzenbefunde bei Skoliose und den sogenannten Tiefstand der rechten Lungenspitze, V. Kollert, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 335.*

Whispered Voice Sounds in Pulmonary Lesions.—The whispered voice sound is of value in the differential diagnosis of pneumonia, bronchitis, emphysema, asthma, tuberculosis, neoplasm, pneumothorax and empyema. The usual technique is employed in eliciting the sign, being careful that the patient whispers during expiration. In pneumonia the voice sound is close to the ear and clear cut, resembling the bone conducted sound as heard over the occipital protuberance. In bronchitis it is not increased, but is heard as a distant rush of air over the hilum, lower trachea and upper scapulae. In bronchiectasis it varies from a definite clearness of voice sounds, interspersed with areas of normal transmission of sound, to loud and tubular sounds, depending on the degree of bronchial dilatation. In tuberculous infiltration the sound is more distant than in pneumonia but it is distinct: with cavity it is high-pitched, close to the ear and harsh. In emphysema the sound is diminished; in carcinoma it is increased but not so much as in pneumonia.—*Observations of the Whispered Voice Sound in Lung Conditions Other than Pneumonia, H. H. Lissner, Med. Rec., December 3, 1921, c, 977.*

Williams's Tracheal Tone Resulting from Displacement of Trachea in Contracting Fibrotic Pulmonary Tuberculosis.—A case of displacement of the trachea to the right side by fibrotic contraction in a case of open pulmonary tuberculosis occurring in a young man twenty years of age is reported. The displacement was corroborated by X-ray, while the clinical findings revealed Williams's tracheal tone on the right side and necessitated a differential diagnosis from almost similar findings with a large right-sided cavity (Wintrich's phenomenon).—*Williamsscher Trachealton infolge Verlagerung der Luftröhre bei schrumpfender Lungentuberkulose, J. Strasburger, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 457.*

Phrenic Pressure Pain Points in Pulmonary Tuberculosis.—In 1873 Mussy described five points along the course of the phrenic nerve where pressure would elicit pain, indicating thoracic disease and frequently leading to an erroneous diagnosis due to the referred pain: 1. A point between the two origins of the sternocleidomastoid where the phrenic nerve bends around the scaleni anteriorly. 2. Along the sternal border in the first and second intercostal space. 3. *Boulon diaphragmatic Mussy*, in the vicinity of the stomach, at the junction of the extended tenth rib line with the extended parasternal line (on the right side in the vicinity of the pylorus or duodenum and on the left side in the vicinity of the greater curvature of the stomach). 4. The point of insertion of the diaphragm into the thoracic wall (*Huchard's demi-ceinture douloureuse*). 5. Pain points in the vicinity of

the cervical plexus and along the spinous processes of the vertebral column in the neck, where nerves having a common root may occasion pain in the shoulder and supraclavicular regions. To these Huchard added: 6. The epigastric point between the xiphoid process and the costal arch, and, 7. *bouton diaphragmatique dorsal ou posterior*, next to the spinal column in the eleventh intercostal space. In 27 cases reported in detail the Mussy pressure pain points were found to be of inestimable value. The cases include pseudogastric and duodenal ulcers, pseudocardiac neuroses, pseudocholelithiasis, pseudoappendicitis and pseudonephrolithiasis, in which more careful and repeated pulmonary examinations revealed the source of trouble. In hemoptysis, especially when the amount is in excess of 2-3 teaspoonfuls, the Mussy pressure points are obtained, within the third or fourth day, on the same side as the pulmonary hemorrhage. If morphine or codein is given, the pressure points occur on both sides, and are of no value in localizing the lesion; for this reason sodium chloride therapy for hemorrhage is preferred. This diagnostic means is especially valuable in patients that cannot otherwise be carefully examined. The pressure points are absent with slight hemorrhages, and with profuse hemorrhages occurring in advanced phthisis, when basal lesions and pleural adhesions are commonly present. The pressure points resulting after hemorrhage may disappear within fourteen days, or not for months or years if new metastatic tuberculous foci develop near the spinal column or mediastinum. They are valuable in indicating involvement of the diaphragm or mediastinum, and in revealing masked tuberculosis, especially confusing conditions of other viscera (gastrointestinal tract, heart, liver and gall bladder, and kidneys).—*Die Phrenikusdruckpunkte bei der Lungentuberkulose und ihre Bedeutung für die Erkennung der blutenden Seite bei Hämoptoe, für die Frühdiagnose der Lungentuberkulose und die Erkennung der larvierten Tuberkulosen, W. Neumann, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 206.*

Effect of Ingestion of Foodstuffs on Respiratory Exchange.—The total pulmonary ventilation of 5 cases of advanced pulmonary tuberculosis was approximately twice that of 5 normal controls. The percentage of carbon dioxide produced and of oxygen absorbed, in terms of expired air, were much reduced as compared with normals. The alveolar ventilation in the tuberculous patients was greater than that in the normal subjects, as was the ratio of alveolar ventilation to the volume of carbon dioxide expired. The ingestion of protein food increased both heat production and total pulmonary ventilation, in a corresponding degree in both tuberculous patients and controls. After ingestion of 70 grams protein (from 40 to 45 grams per square metre of body surface) heat production was increased from 22 to 29 per cent and ventilation from 20 to 25 per cent in tuberculous subjects. In the form of fat the greatest number of calories may be ingested with the least effect on the pulmonary ventilation. Carbohydrates increase the ventilation out of all proportion to their effects upon the general oxidative processes and heat production. This is believed to be due to the relatively greater quantities of carbon dioxide eliminated during carbohydrate oxidation, in other words, to the higher respiratory quotient.—*The Effect of the Ingestion of Foodstuffs on the Respiratory Exchange in Pulmonary Tuberculosis, W. S. McCann, Arch. Int. Med., December, 1921, xxviii, 847.*

Leucocytes in Pulmonary Tuberculosis.—Leucocyte counts (total and differential) were made on normal individuals and consumptives, the technique being carefully worked out beforehand. The average error in leucocyte counts was below 3 per cent, and in differential counts below 2 per cent for the neutrophiles and lymphocytes (large and small). "Inhomogeneity" (differences in composition of consecutive samples of blood) was found exclusively in extensive progressive cases, especially mornings and evenings. At times the leucocyte types were unequally distributed, especially in very chronic cases (and in some healthy individuals). This qualitative inhomogeneity was present only afternoons. Leucocytes are usually increased, even in mild cases; normal counts occur, especially in terminal cases and during the period of formation of cavities (according to the literature a leucocytosis should be found at this time). In tuberculosis there is no lymphocytosis: mild stationary cases have a blood picture similar to that in healthy individuals. All other stages of the disease have a relative (also an absolute) polynucleosis which increases, as the activity and disease progresses, to a maximum. The mononuclears and transitionals increase from the beginning of the disease; in the terminal stages they are diminished relatively; but at this time they can exceed the relative lymphocyte value. The eosinophiles and mast cells are barely influenced by the disease, and only in the severe cases do they become diminished and can eventually completely disappear. The blood picture

in tuberculosis is of no value for differential diagnosis; and prognostically only by comparison with earlier counts may data of value be obtained. The inconstancy of the blood picture must, however, be taken into consideration before drawing conclusions. In careful tests, a digestion leucocytosis (so much cited in the literature) was not found in man in a single instance. No uniform results obtained, but possibly in mild cases an afternoon leucocyte increase was more common, while in severe cases a diminution existed. There was no ground for correlating this with digestion, however. In the majority of the cases a relative decrease of the neutrophiles occurred at 4 o'clock in the afternoon; sometimes there was an increase 1 to 2 hours after meals. Whether this was related to digestion is uncertain. Leucocyte shadows, especially of the mononuclears and transitionals, appear to be more numerous one and a half or two hours after meals. The diet is without influence. A constant exercise leucocytosis did not occur. Increases, decreases and no change in the leucocyte counts occurred in the same sick individual after equivalent exercise. Relative increase of lymphocytes occurred twice as commonly as a relative neutrophile increase. After an initial lymphocytosis no polynucleosis occurred. The relative neutrophile increase is more common with favorable prognosis; relative lymphocyte increase more common with unfavorable prognosis. In 0.5 of the cases the variations are within 5 per cent. Temperature and the diazo reaction have no influence on the relations of the leucocytes. The course of the leucocyte curve is not characteristic for any one day. It is noticeable that about one-third of all cases have their daily maximum shortly after awakening. There seems to be a certain relation between the leucocyte curve and weather conditions. The daily curves of the relative neutrophile values are different and not characteristic. The relative daily maximum of the neutrophiles occurs mostly at 11:30 A.M. or 2:00 P.M. The course of the curves is individual, the character of disease and other controllable factors having little influence.—*Beobachtungen über die Leukozyten bei der Lungentuberkulose unter besonderer Berücksichtigung von Verdauung und Bewegung, W. Gloël, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 404.*

Leucocytes in Chronic Pulmonary Tuberculosis after Tuberculin.—That tuberculin administration brings about a leucocytosis has been known for some time, though it has not been found to occur invariably. Eosinophilia has been observed to occur in prognostically favorable cases. It has been observed in this series of cases that eosinophilia may disappear in cases of bronchial asthma arising from hypersensitization caused by a pulmonary tuberculosis. When the latter improved with tuberculin the asthma also disappeared. During tuberculin treatment a leucocyte count is a useful guide as to its action, favorable or not. The white count is made in the morning a day or so after admission, counting 200 cells. During tuberculin administration a favorable effect is evidenced by a normal count or a moderate leucocytosis, provided in the latter case complications can be ruled out. On recumbency the leucocytosis returns to normal. An evident neutrophilia beyond 75 per cent is always to be considered as a bad sign.—*Über den örtlichen Befund und die Allgemeinreaktion besonders über das weisse Blutbild bei den verschiedenen Arten der chronischen Lungentuberkulose, E. Romberg, Ztschr. f. Tuberk., May, 1921, xxiv, 191.*

Cultivation of Tubercle Bacilli from Sputum.—The difficulty in cultivating tubercle bacilli from positive sputum is due to the fact that sputum, kept in the incubator for more than eight hours, permits the secondary organisms greatly to outgrow the tubercle bacilli. In order to prevent this the following method was used: The sputum is placed in a sterile petri dish and covered with a thin layer of 4 or 5 per cent solution of glycerin, no stirring being done. After the second day the sputum becomes homogeneous and a considerable increase in the tubercle bacilli contained in it occurs. If one of the grayish-yellow particles, the size of hemp seed, be isolated on a slide and spread out, innumerable tubercle bacilli will be seen lying parallel to each other, somewhat wider than the original organisms; and there are many granulation forms. The contaminating organisms, it is true, also have increased; but they have not had the chance to outgrow the tubercle bacilli, having been inhibited in their growth by the glycerin sufficiently to give the tubercle bacilli a better chance to proliferate. The sputum is then diluted with 3 or 4 times its volume of sterile distilled water and centrifugated at high speed for half an hour, and the supernatant fluid decanted and replaced with antiformin, shaken vigorously and again centrifugated at high speed for 30 to 45 minutes. There then results a definite grayish precipitate which, after several washings with distilled water, consists mostly of tubercle bacilli. It seemed that this mode of growing and isolating the organisms would be a desirable

one for the preparation of autogenous bacterins. To accomplish this, 2 or 3 masses of the above precipitate are placed upon a cover glass that has been weighed empty and then with the precipitated tubercle bacilli. These are then spread out upon the glass and stained, and a large number of fields of the stained tubercle bacilli are counted. Knowing the area of the cover glass, number of visual fields and the weight of the total mass on the cover glass, the number of organisms per mgm. can be determined. A definite quantity of the sediment is then weighed upon a specially prepared hollow cover glass. This is then diluted, according to the strength of bacterin desired with physiological saline solution. (*Abstractor's note:* No mention is made of killing the organisms or of grading the dosage.)—*Über die Vermehrungsfähigkeit der Tuberkelbazillen im Sputum und die Möglichkeit der Gewinnung einer Autovakzine aus dem Sputum unter Umgehung der Kultur, R. Korbsch, Ztschr. f. Tuberk., April, 1921, xxxiv, 332.*

Concentration of Tubercle Bacilli in Sputum with Gum Mastic.—Fifty cubic centimetres of sputum are rendered homogeneous, by warming it with 3 times its volume of water in an Erlenmeyer flask on a hot water bath, with repeated shaking for about 30 minutes. This is more effective than mere stirring, and a milky homogeneous liquid results. To 8 cc. of this liquid are added 2 cc. of a gum mastic solution in a graduated test tube and the mixture placed in the incubator for the day and permitted to sediment out. After about twenty-four hours it is centrifugated. Three slides are prepared from the precipitate, one being prepared from the fluid immediately above and in contact with the precipitate. Usually the bacilli are most easily found in the lowest portion of the precipitate, which is given first attention. The gum mastic solution is prepared from a 10 per cent stock mastic solution in absolute alcohol or strong alcohol, which is filtered after solution and keeps indefinitely. The mastic solution used for the test is prepared by diluting 0.5 cc. of the stock solution with 4.5 cc. absolute alcohol, which is then blown into 20 cc. of distilled water by means of a pipette of ordinary calibre. This solution of gum mastic will keep for two or three weeks. The advantages of this method over others such as the antiformin method are its inexpensiveness, and the material adheres to the slide better during the process of staining and gives a higher percentage of positive findings. Of 3000 carefully examined microscopic fields there were 978 (32.6 per cent) positive with the ordinary smear preparation, and 1618 (53.9 per cent) positive with the gum mastic method.—*Ein neues Tuberkelbazillenanreicherungs Verfahren mit Mastixemulsion, R. Pfeiffer and W. Robitschek, Centralbl. f. Bakt., September 1, 1921, lxxxvii, 27.*

Disinfection of Tuberculous Sputum.—Tubercle bacilli are effectively destroyed in sputum by an alkali-phenol (or cresol, xylenole and halogen substitution products of the latter), prepared by taking equl parts of phenol or cresol and 10, 20, or 30 per cent solution of sodium hydroxide, so that the resulting solutions contain respectively 5, 10 and 15 per cent of sodium hydroxide.—*Neue Versuche zur Abtötung der Tuberkelbazillen im Auswurf, P. Uhlenhuth and E. Hailer, Zeitschr. f. Tuberk, May, 1921, xxxiv, 340.*

New Stain for Tubercle Bacillus.—The following method of staining was found to yield 98.5 per cent positives of 1012 sputums, as compared with 81.5 per cent positives with the Ziehl-Neelsen method: 1. Staining for 2 minutes with carbolfuchsin (Ziehl-Neelsen) after bringing the stain to the boiling point. 2. Decolorizing with 3 per cent hydrochloric acid and alcohol, until all possible red color has disappeared. Rinsing in water. 3. Counterstaining with saturated, aqueous solution of picric acid (about 1 per cent) for one minute, followed by rinsing in water. Alcoholic picric acid solution favors the penetration of the yellow stain into the tubercle bacillus and produces a brownish coloration of the organism. Such is not the case with the aqueous solution of picric acid.—*Zur Technik des Nachweises der Tuberkelbazillen im Sputum, W. Bender. Centralbl. f. Bakt., July 8, 1921, lxxxvi, 461.*

Recent Stains for Tubercle Bacillus.—Five more recent staining methods are compared. Konrich's method was found to be superior to all the others, more positive sputums being obtained with it than with the Ziehl-Neelsen and its modifications.—*Vergleichende Untersuchungen der von Ziehl-Neelsen, Gasis-Telemann, Kronberger, Unna-Pappenheim und Konrich angegebenen Färbemethoden zum Nachweis von Tuberkelbazillen, W. Bernblum, Centralbl. f. Bakt., September, 1, 1921, lxxxvii, 23.*

Recent Stains for Tubercle Bacillus.—Five newer methods of staining the tubercle bacillus are compared with the Ziehl-Neelsen method and are found superior to it in ease of detecting the bacillus, in clearer cut contrast-staining and in ease of stain-

ing. Konrich's method (1920) was found especially serviceable both on account of being inexpensive and yielding good results. —*Vergleichende Untersuchungen über neuer Färbemethoden für Tuberkelbazillen, O. H. Spreitzer, Centralbl. f. Bakt., July 8, 1921, lxxxvi, 458.*

Comparative Study of the Staining of Tubercle Bacilli.—The staining methods of the past year (by Konrich, Jotten-Haarman, Schaedel and Schulte-Tigges) are reviewed. Of these Schaedel's differs materially from the others, since it aims to demonstrate the granules of the tubercle bacilli. Purple and brown stains are used, and this is therefore serviceable in the presence of green and blue color-blindness. Picric acid is a particularly good stain for the demonstration of tubercle bacilli, but the yellow stain is unfortunately not very prominent. By using a saturated solution of picric acid in absolute alcohol a much more distinct yellow staining is produced.—*A Comparative Study of the Staining of Tubercle Bacilli and the Author's Modification Method of Staining Tubercle Bacilli, N. Takeshita (Iji Shimbun, May, 1921, no. 1070), Japan Med. World. September 15, 1921, i, no. 5, 16.*

Tubercle Bacilli in Duodenal Contents.—Carnot and Libert removed the duodenal contents in 6 patients with advanced pulmonary tuberculosis by means of the Einhorn tube and were surprised to find tubercle bacilli in every one of them. In 7 patients in whom a diagnosis of probable tuberculosis had been made of the glands, peritoneum or joints, tubercle bacilli were found in the duodenal contents of 3. Thirty nontuberculous patients were examined and tubercle bacilli were not found. This procedure may prove to be a diagnostic aid in tuberculosis.—*Présence du bacille tuberculeux dans le liquide duodeno-pancreatique retiré par tubage, P. Carnot and E. Libert, Presse Méd., July 13, 1921, xxix, 557.*

Mutation Forms of Friedmann's Turtle Bacillus.—Two differently growing colonies of this bacillus were isolated upon glycerine agar from old cultures. One, which was considered the normal, consisted of flat, dry, irregular, lustreless colonies. The others, presumably mutation forms, were circular, pure white, and with a glistening surface. An attempt was then made to produce the normal from the mutation form. This was successfully accomplished by streaking plates of glycerine agar with loopfuls of a seven month-old glycerine broth culture of the isolated mutation form and growing it for a few weeks at 37°C., and then at room temperature. The typical normal forms were found growing side by side with the mutation form.—*Über Variabilitätserscheinungen bei säurefesten Bakterien, E. Gildemeister, Centralbl. f. Bakt., August 10, 1921, lxxxvi, 513.*

Bovine Tuberculosis and Avirulent Tubercle Bacilli.—Klimmer's method of vaccination of cattle with avirulent tubercle bacilli was carried out on about 112 animals. The organisms were of human type, rendered avirulent by exposure to heat and by subsequent cultivation on artificial media. Inoculation was made subcutaneously in the cervical region with 5 cc. of "antiphymatol." Prophylactic inoculation was given three months after the first injection and every year thereafter in animals free from tuberculosis. The animals that reacted were given curative injections every three months during the first year, and later once a year. Of 112 animals reacting positively after the first injection, 33 were found free from tuberculosis at inspection in the slaughter house, 65 showed healed processes, while 14 showed more or less recent lesions. The value of "antiphymatol" is hereby confirmed.—*Die Bekämpfung der Rindertuberkulose mit Hilfe abgeschwächter Tuberkelbazillen, H. Haupt, Ztschr. f. Tuberk., December, 1920, xxxiii, 157.*

Fate of Avian Tubercle Bacilli in the White Rat.—In a previous communication the natural immunity of the white rat to bovine tubercle bacilli was reported on. In the present one the resistance of white rats to avian bacilli is dealt with. When 0.02 mgm. of avian bacilli is injected intraperitoneally, the greater part of the bacilli are taken up by the peritoneal cells within five minutes (the same being the case with human bacilli), and in twenty-four hours no bacilli remain free in the peritoneal cavity. The phagocytosis was chiefly effected by the "hystionic small monocuclear cells" and large mononuclear cells (in other words the macrophages). A part of the bacilli reach the mesentery, where nodules are formed which usually begin to disappear from the twenty-fourth day on, some nodules leaving traces behind. All the remaining bacilli penetrate the great omentum, especially in Raynaud's nodules, where they completely disappear. Human bacilli require about one hundred days to effect this, while avian bacilli require only forty days. When the bacilli are injected subcutaneously, they enter the cells in this locality and produce a nodule there, rarely entering the lymphatic system near the site

of injection. Both the bacilli which entered the cells and the lymphatic system disappear soon. These phenomena are the same for human bacilli. If the bacilli are injected intravenously, they are carried into the lymphatic system, the lungs and other organs, but sooner or later they all disappear. They remain in the lungs much longer than in any other organs and the formation of nodules is also more prominent in the lungs. From previous experiments with bovine and human bacilli, it was concluded that the natural immunity of the white rat to tuberculosis is due to the constant phagocytosis by living cells, the large mononuclear phagocytes, the endothelial cells, and the cells of the lymph nodes; and that the natural defense is complete only when the bacilli are made to pass through the endothelial cellular tissues or through the lymph nodes. The experiments with the avian bacilli further substantiate this.—*On the Destination of Avian Tubercle Bacilli in the Body of the White Rat, Y. Watanabe. (Saikingaku Zasshi, June, 1921, no. 309) Japan Med. World, October 15, 1921, i, no. 6, 19.*

Diazo and Urochromogen Reactions and Their Clinical Significance in Pulmonary Tuberculosis.—According to Weiss, the presence of urochrome in the urine occasions the diazo reaction, and its precursor, urochromogen, the permanganate reaction. Ehrlich believed the diazo reaction was attributable to the presence of aromatic bodies, especially phenols. The diazo reaction with 1 per cent or 0.1 per cent to 0.02 per cent watery paracresol solution (with a small amount of soap solution to produce foaming) cannot be differentiated from a positive reaction in the urine. Ortho and metacresol do not give the reaction. Tyrosin in higher concentration gives a typical reaction. The addition of an equal amount of ortho or metacresol solution to a strongly reacting positive 1 per cent paracresol or 1.6 per cent tyrosin inhibits a positive reaction. The permanganate test occurs with 1 per cent to 0.01 per cent orthocresol and with metacresol, 1–0.1 per cent, while paracresol reacts the weakest. Urochrome and urochromogen may be isomers of a combination resembling the para combination, while urochromogen is not an individual substance, but a mixture of ortho and meta combinations, probably only one of these (ortho combinations). A urine giving a positive permanganate reaction and negative diazo was so changed by the addition of a proper amount of permanganate that it then gave a positive diazo reaction. Probably the permanganate oxidized the ortho and meta compounds, so that a urine which did not give a diazo reaction became positive; further addition of permanganate oxidizing the para compounds, so that the reaction again became negative. Clinically, the urine of 116 cases of pulmonary tuberculosis was examined at daily, weekly, or monthly intervals. In general, the permanganate preceded the diazo reaction for a long time; rarely the reverse occurred; and frequently both reactions occurred coincidently. In cases with a variable course there was a certain relation between the general condition and temperature, and the reactions. During specific therapy the reactions were usually positive. The previous observations on the value of these reactions was borne out. In the majority of the early cases (prognostically favorable cases) the reaction was negative, while the unfavorable cases were positive. Frequently the reactions became positive only long after the prognosis was definite, and in some only two to three months before death. A positive, persisting reaction was of far more prognostic value than a negative reaction. The great value in the positive reaction lay in clinically doubtful cases. Positive reactions contraindicate specific therapy and suggest pneumothorax as a life-saving measure. The Kusso (methyl green), Wiener (Jenner dyestuff solution), and Kronberger (gentian violet) reactions can only be looked upon as superfluous.—*Untersuchungen über das Wesen der Diazo und Permanganatreaktion und ihre klinische Bedeutung bei Lungentuberkulose. E. Guth, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 198.*

Autogenous Urine Reaction of Wildbolz in Diagnosis of Active Tuberculosis.—The reaction is of too weak a character and is too inconstant to be of any practical value.—*Der Nachweis aktiver Tuberkulose durch die Eigenharnreaktion von Wilbolz, E. Liebhardt, Ztschr. f. Tuberk., May, 1921, xxxiv, 99.*

Wildbolz Reaction as Diagnostic Aid in Active Pulmonary Tuberculosis.—The Wildbolz method was employed in this study in 100 cases of nonpulmonary tuberculosis and in 30 cases of pulmonary tuberculosis. *Results*: A negative intracutaneous urine reaction does not exclude an active pulmonary tuberculous process. A positive reaction makes the presence of an active tuberculous process very likely. No parallelism between the Pirquet and the autogenous urine reaction could be established, since in cases where the former was very strongly positive the latter may be weakly positive or entirely negative. The

unconcentrated urine never produces a positive intracutaneous reaction. Urine that has been concentrated *in vacuo* gives stronger reactions than urine concentrated in the open.—*Die Wildbolzsche Eigenharnreaktion als diagnostisches Hilfsmittel für aktive Tuberkulose, H. Alexander, Ztschr. f. Tuberk., April, 1921, xxxiv, 321.*

Serology of Tuberculosis.—The serology of tuberculosis considers nonspecific changes, based upon the search in the serum for substances of a general nature, as an increase or decrease in protein composition, etc., while specific changes are based upon the search for substances produced toward the disease germ or its antigens. Changes in nonspecific substances were studied by using various reagents as precipitants, for instance, Esbach's reagent, Bruck's lactic acid precipitation, flocculation with alcoholic extract of horse's heart, etc., but none of these gave any practically valuable data regarding differences between the serums of patients with different forms of tuberculosis, nor any practical difference between tuberculous and normal serums. Likewise, attempts to find specific antibodies in the serum of tuberculous patients, using the lipoid binding reaction devised by Meinecke (*Deutsch. med. Wchnschr., 1920, no. 37*), and different specific antigens (Partigens *L, A, F, N* and *MTbR*, T. R., B. E. and O. T.) gave just as little satisfaction. The same results were obtained with serums from tuberculous men, human tuberculosis suspects and tuberculosis-free horses and conclusions regarding a specific reaction could not be drawn.—*Zur Serologie der Tuberkulose, E. Meinicke, Beitr. z. Klin. d. Tuberk., October 23, 1920, xlvi, 1.*

Complement Fixation in Tuberculosis.—Only antigen obtained from pure cultures, living or dead, have given constant highly specific results. In these determinations Besredka's antigen, tubercle bacilli grown in egg bouillon and killed at 100°C., was used. The technique was that worked out by Calmette and Massol, and consists in using a constant quantity of antigen and variable quantities of complement. The complement titre was always made against normal blood serum. The tubes were incubated at 37° for half an hour and the readings taken at once. Tests were made on 346 sera, 200 of subjects known or suspected to be tuberculous; also on 77 subjects with a negative, and 68 with a positive Wassermann reaction. Of 150 known tuberculous sera 141 gave positive reactions. These were 59 first stage cases with 57 positive reactions, 54 second stage cases of whom 54 reacted positively, and 37 third degree cases with 34 positives. The percentages of positives were 96, 92.5 and 91.8 respectively. The 9 certainly tuberculous patients who did not react positively died from ten days to six weeks after the examination. There were 20 cases of surgical tuberculosis (Pott's disease, tuberculous osteitis, etc.) all of which gave a positive fixation reaction. One case of renal and 2 of peritoneal tuberculosis reacted positively. Twenty-one cases, in which there was neither clinical nor bacteriological evidence of tuberculosis, 1 case of bacillary enteritis and 5 pleurisy with effusion all gave negative reactions. Of the 77 sera with negative Wassermann reactions, 10.3 per cent gave positive complement fixation and of the 68 sera with positive Wassermann reactions 34.2 per cent gave positive reactions. The reaction occurs during the initial period of tuberculosis, before the disease can be clinically determined. The high percentage of positive reactions makes it one of the most certain methods of diagnosis. A negative reaction is not indisputable proof of the absence of tuberculosis: pleurisies with effusion are nearly always negative and a febrile period of several weeks' duration causes the serum to react negatively. In a very advanced tuberculosis a negative result is a very bad sign. The early appearance of the reaction makes it useful for detecting familial tuberculosis and for use in social prophylaxis.—*De la réaction de fixation dans la tuberculose, B. Fried, Rev. d. l. Tuberc., December, 1920, i, 410.*

Complement Fixation Test in Tuberculosis.—The procedure adopted in the Institute of Pathology and Research at St. Mary's Hospital was as follows: The serum was taken from the specimens and inactivated and then labeled by Dr. Fleming, so that Dr. Punch had no means of knowing which blood he was dealing with, until he had completed the test. The serum of 185 persons was examined. Seventy-one gave a positive result. Of these, 42 were cases with tubercle bacilli in the sputum at the time of the performance of the test. In 10 cases tubercle bacilli were found in the sputum subsequent to the performance of the test. Nineteen other cases, with various signs, symptoms and history of tuberculosis, showed a positive complement fixation test. One hundred and two cases in which there was no suspicion of tuberculosis gave a negative test, eleven cases with a suspicion, but no evidence of tuberculosis gave a negative test. Fifty cases from the Brompton Hospital showed indifferent results, though in 450 other cases the results were comparable to those published previously.

The author concludes that the results here reported are strictly comparable to those obtained by him previously, and that the conclusions drawn from the previous results are confirmed by the present series, namely, that the complement fixation test is a reliable means for the diagnosis of an active or recently active tuberculosis lesion, and that a negative result is as reliable an indication of the absence of such a lesion as a positive one is of its presence.—*The Value of the Complement-Fixation Test in Pulmonary Tuberculosis; Introductory Note by A. Fleming, A. L. Punch, Lancet, September 3, 1921, cci, 497.*

Relation of Tuberculosis to General Bodily Conditions.—The author summarizes the general trend of his remarks as follows: that one of the most important connecting links between tuberculosis, especially pulmonary tuberculosis, and various general conditions of the body and local disease and accidents in various viscera, is the state of the patient resulting from the tuberculous infection itself, either through its toxins or through the local presence of tubercle bacilli, and through the local and general reactive processes by which the body more or less successfully opposes or overcomes the bacillary parasitic invasion. That it is only with the help of such relative processes of resistance, which may be greatly favored and encouraged by general and special antituberculosis hygiene, that the human race can hope eventually so far to gain the upper hand that tuberculosis may very largely lose its character as one of the most frequent causes of death and disability. Occasional visceral and cutaneous diseases and accidents, of which spontaneous pneumothorax arising in apparently healthy persons, though relatively rare, was taken as a type, should be regarded as tokens of the price which we may be called on to pay, if our struggle against tuberculous infection is, on the whole, ineffectual.—*The First Mitchell Lecture on Tuberculosis. Its Relations to General Bodily Conditions and to Other Diseases, F. P. Weber, Lancet, November 5, 1921, cci, 940.*

Complement Fixation in Tuberculosis.—The literature is reviewed from the point of view of specificity, and the diagnostic and prognostic importance of the reaction. The reaction may be considered as highly specific, if certain sources of error are kept in mind. Cases of syphilis and malaria with parasites in the blood occasionally manifest a postive reaction in the absence of tuberculosis. In a large variety of other affections examined, including acute bacterial infections and chronic disease of various organs, the reaction has been found negative in the great majority of cases, when tuberculosis could be excluded. On the other hand, it may be negative in certain cases of frank tuberculosis, chiefly when the latter is of the rapid, overwhelming type with rapid emaciation. As a diagnostic method it is more specific than any of the types of the tuberculin reaction, and a more delicate test than the examination for bacilli, and with certain precautions fully as specific. The following collection of 500 cases examined is submitted:

	TOTAL	REACTIONS		
		+	−	Per cent
Tuberculosis, pulmonary, confirmed	88	86	2	97.75
Tuberculous peritonitis	6	4	2	66.6
Serofibrinous pleuritis	31	17	14	55.0
Tracheobronchial adenopathy	49	22	27	45.0
Presumptively tuberculous	100	52	48	52.0
Various nontuberculous diseases	226	19	207	8.4
Total	500	200	300	
In the first four categories	174	129	45	75

The conclusion from this is that a positive reaction implies the existence within the organism of a tuberculous lesion "having a certain degree of activity." The interpretation of a negative reaction is more complex. It may occur in a case of rapid tuberculosis, and in that case is of no significance as respects diagnosis. Where no other positive signs of tuberculosis can be elicited it confirms a previous impression that the ailment is nontuberculous. When it occurs in a case presenting presumptive signs of tuberculosis, like hemoptysis and pleurisy, it calls for reserve in making the diagnosis. Finally, its occurrence in a patient who has previously had tuberculosis authorizes the conclusion of cure. With the above considerations in mind the reaction may be a useful measure in prophylaxis.—*Réaction de fixation et tuberculose, J. Rieux and C. Zoeller, Presse Méd., November 5, 1921, no. 89, 881.*

Complement Fixation Tests on Children.—To the complement fixation test, using the antigen of Besredka, of 54 presumably healthy school children between the ages of seven and fourteen, 50 gave negative reactions, while 4 gave positive tests. These 4 were subsequently shown to be tuberculous by physical and roentgenological examination. Tuberculin cutaneous tests resulted positively in 25 of these children, and 3 of the 4 children gave negative cutaneous reactions with tuberculin. It appears from this that, whereas the tuberculin test is positive in all cases of tuberculosis, either active or quiescent, the complement fixation test is positive only in active tuberculosis.—*Le depistage de la tuberculose chez l'enfant au moyen de la reaction de fixation, J. Sevi, Presse Méd., June 8, 1921., xxix, 484.*

Tuberculous Scleritis and Keratitis.—As a result of a study of 6 cases of tuberculosis of the sclera, it is believed that tuberculous keratitis is a complication of the scleritis. Von Graefe describes the involvement of the cornea which develops from foci in the sclera as "sclerotic corneitis," since the white spots in the cornea resembling the sclera are nothing more than cicatrizations. The data obtained indicate that tuberculosis develops easily in the frontal margin of the sclera and from here the infection involves the cornea, and white spots may develop. It is believed that Von Graefe's "sclerotic corneitis" is this infection. Other conditions than tuberculosis, for instance, lues, metabolic diseases, gout, autointoxications and rheumatism, may also be associated with these inflammations. This paper, however deals only with tuberculosis. —*On Corneal Tuberculosis, S. Suganuma, (Keio Igaku, January, 1921) Japan Med. World, May 15, 1921, i, no. 1, 22.*

Tuberculous Iritis.—A woman of forty-one, who had had an attack of iritis seven years previously, was found to have been suffering from inflammation of the left eye for four months. The left pupil was dilated and irregular, and did not react to light. There were numerous deposits on Descemet's membrane and two grayish brown nodules on the anterior surface of the iris. The pupils were bound down by posterior synechia. The pupil of the right eye was contracted. There were opacities of the vitreous. Atropine was instilled into each eye. The condition remained about the same for four weeks. Diagnosis of tuberculous iritis was made. The patient was given an injection of tuberculin, following which she had a marked reaction. For three months she was placed on a farm in a high section of the country, followed regular tuberculosis regimen and was given tuberculin treatment. Improvement was very marked, both generally and locally.—*Tubercular Iritis, L. M. Carvill, Amer. J. Ophthal., October, 1921, iv, 742.*

Tuberculosis of the Facial Lymph Nodes.—Tuberculosis of this group of lymph nodes is comparatively rare, but occurs in a sufficient number of cases to merit consideration. These nodes lie along the facial artery and vein and are found in 3 groups: an inferior or maxillary group, the most constant of all, lies in front of the masseter muscle; a middle or buccinator group lies close to where Stenson's duct crosses the buccinator muscle; and a third group, the least common of all, called the superior group or the infraorbital group. They are sometimes the site of tuberculosis. Symptoms are the same as in tuberculous lymphadenitis elsewhere. There may be a nodular mass, with or without pain, chronic in its course, and frequently going on to suppuration or cold abscess and giving rise to a fluctuating intact mass under the skin. If not given surgical treatment, it terminates by breaking through the skin with the formation of a fistula. Treatment is the same as in the case of tuberculous cervical lymphadenitis, with the exception that the cosmetic consideration is very important. However, the disfigurement of a surgical scar is generally the lesser evil, and is to be preferred to that which results from the formation of a fistulous tract.—*La tuberculose des ganglions geniens, C. Lenormant, Presse Med., June, 1, 1921, xxix, 433.*

Tuberculous Lymphadenitis in Germany during the War.—This form of the disease increased during the war from 50 to 150 per cent above the peace time percentage (4.3). In 1919 it rose to 12.4 per cent, or 200 per cent higher than before the war. No marked increase occurred during the most favorable age for this condition, namely, up to the twelfth year, but a considerable increase in the number of cases among adults up to fifty years of age occurred. In patients over fifty years of age during peace time no outspoken cases of tuberculous lymph nodes occurred, while during the war the incidence in patients of this age was 8 to 11 per cent. The most common location was the neck, rarely the axilla, elbows, and groin (94.7 and 5.3 per cent, respectively), before the war. From 1916 to 1919, of 261 cases 3.4 per cent localized in the axilla, 1.5 per cent in the groin, and 1.1 per cent in the cubital fossa. Hence, during the war period the percentage of

tuberculosis of the nodes of the neck dropped to 88.6 per cent, in favor of an increase in their location elsewhere in the body to the extent of 11.4 per cent. However, some in the latter were combined with tuberculous cervical nodes. The consistency of the nodes was found in the prewar period to be very firm in 46.8 per cent of 75 cases studied; more or less softened in 41.3 per cent; and in 11.7 per cent fistulæ had occurred. During the war period, of 261 cases, 47.3 per cent were of firm, 22.9 per cent of soft consistency and 29.6 per cent were fistulous. Thus twice as many war period cases were fistulous. This increase in the latter cases is ascribed to the food which preponderated in carbohydrates and lacked in protein content, this producing a disturbance in the fluids of the body and consequently of the blood, with a resultant change in the osmotic balance of the cells and a consequent tendency to edema. This is illustrated in the condition known as war edema. The tissue cells are injured by lack of protein, in their physicochemical interchange of fluids. In this tendency to waterlogging of the body tissues at large, the lymph nodes can be expected to share, resulting in softening and discharging nodes. The white blood count fell into three categories: (1) cases with counts of 5000 to 10,000; (2) over 10,000; and (3) less than 5000. Relationship existed between the white count and the consistency of the nodes: half of class (1) had firm glands; of the other half, the fistulous were more numerous than those with softened nodes. Class (2) consisted half of fistulous cases and of the other half the softened were more numerous than the firm nodes. Most of class (3) had firm nodes. The treatment is judicious roentgenization and Deycke-Much's injections twice a week. For abscesses, besides simple puncture, X-raying or iodoform-glycerin injections or Wederhake's iodoform-glycerin tannin therapy was used.—*Klinische und kritische Beiträge zur Frage der Lymphdrüsentuberkulose der Kriegszeit, W. Drügg, Deutsch. Ztschr. f. Chir., June, 1921, clxiv, 165.*

Bronchitis in Tuberculosis.—Anatomopathological conditions furnish the basis for a classification of the tuberculous bronchitides. A pure bronchitis does not exist; bronchitis is merely a syndrome, betraying a bronchopulmonary affection. When the lung is inflamed the whole bronchopulmonary tree is affected, one or the other tissue more severely according to circumstances. In sections of tuberculous lungs tubercles are never found in the bronchi; when these are tuberculized it is always from within out. The bronchial epithelium is peculiarly resistant, and a tuberculous bronchitis is always secondary to an infiltration of the pulmonary parenchyma. Clinically, it is a syndrome, not a definite morbid entity; one element in a bronchopulmonary affection. It may be an epiphenomenon, manifested either at the beginning of an ordinary tuberculosis; or in the congestive forms; or in a fibrous tuberculosis, with or without emphysema. This bronchitis is merely a reaction in the region of tuberculous lesions. Its intrinsic prognosis is benign, but it is an index of an aggravated local condition. The treatment should be a mild climate without medicines. Or the bronchitis may be an essential one, appearing in one of two clinical forms: either as a chronic bronchitis, with sclerosis and emphysema, of the tuberculous, usually without bacilli; or as a bronchial form of tuberculosis, or inhalation tuberculosis, usually with bacilli. The first of these essential bronchitides, that is, chronic bronchitis without bacilli, is encountered in invalids of the "scrofulous" type. The anatomopathological picture is characterized by sclerosis and emphysema, now one, now the other being dominant, and giving to the respiration either an obscure, or a roughened and blowing character. If repeated exacerbations occur, the density of the parenchyma may increase and the process take more and more the course of a fibrous tuberculosis. Or there may be localizations, pulmonary, pleural, laryngeal, peritoneal or osteoarticular. The emphysema is always a secondary phenomenon: the sclerosis, and the exudates which accompany it, obliterate great numbers of alveoli, about which develops a hypertrophic emphysema of the lung tissue as an attempt at compensation of the reduced vascular field. The treatment is general, with mineral waters: for children, sea air and heliotherapy. Under the second form of essential bronchitis is designated a syndrome which appears rare because its course is generally short and benign and its subjects generally regain their usual health without knowing themselves tuberculous. Their illness could pass for an ordinary bronchitis, were it not that quite early, or at the very beginning, tubercle bacilli appear in the sputum. The stethoscopic signs are disseminated sibilant râles either in one or both lungs, without fixed sounds or position, not especially in the apices, but often with fine diminutive râles at the bases. Or there may be no true râles, but simple friction sounds. These sounds quickly disappear, giving place to signs of generalized emphysema, which is sometimes accompanied by asthmatic crises. The

X-ray examination is negative. The evolution is rapid. In most cases the fever falls rapidly, the general condition improves, the stethoscopic signs become negative, the bacilli disappear and in some six months the disturbance has passed. Remarkable results are obtained by inhalation of formol. This treatment, systematically carried out at the Sanatorium Mangini at Hauteville, was described in a previous work.—*Les bronchites tuberculeuses, F. Dumarest and H. Marcotte, Rev. d. l. Tuberc., April-June, 1920, i, 123.*

Relation of Fibrinous Bronchitis and Asthma to Chronic Pulmonary Tuberculosis.—A number of circumstances give rise to fibrinous bronchitis. In certain cases there is a certain relation to tuberculosis. Of 4716 cases of the latter, 5 had fibrinous bronchitis, and twice tubercle bacilli were found in the fibrinous casts. The prognosis in these cases is not unfavorable. The treatment is general and consists in keeping the tuberculosis in abeyance. Bronchial asthma can exist on the basis of tuberculosis. Active, progressive tuberculosis is rare in bronchial asthma; but more frequently there is evidence of a more or less latent, favorable type of closed tuberculosis. Of the 4716 cases there were 30 with typical bronchial asthma, and of these 18 with closed and 12 with open tuberculosis. The therapy advocated is the climatic, roentgen ray, light baths, lime therapy, etc. Specific therapy is not considered advisable in cases in which the tuberculous foci are well walled off and in which a high antituberculosis allergy exists; but in cases with poor reactivity toward the poisons of the disease process, the relative anergy can be changed to an allergic condition by the cautious use of tuberculin.—*Über die Beziehungen der Bronchitis fibrinosa oder mucinosa plastica und des Asthmas zur chronischen Lungentuberkulose, G. Schröder, Beitr. z. Klin. d. Tuberk., October 23, 1920, xlvi, 125.*

Hilum Tuberculosis.—In pulmonary tuberculosis of the adult the bronchial node tuberculosis is so much a retrograde phenomenon, that clinically it is insignificant, and physically and roentgenologically it is rarely determinable; only calcified nodules are as a rule definitely seen on the plate. In children conditions are different. Phthisiogenetically bronchial node tuberculosis is of the greatest significance. In adults pulmonary tuberculosis extending from the hilum practically never occurs. Shadows on the roentgen plate, that give this impression, originate from confluent fibrosis of the hilum region or from central caseous pneumonia, for which these findings are pathognomonic. The pulmonary tuberculosis of adults begins almost entirely apically or subapically, and occurs not only on the primarily diseased side but also on the other side. The isolated hilum shadow broadening, and the dense lung markings have nothing to do with pulmonary tuberculosis.—*Zur Frage der sogenannten Hilustuberkulose, H. Ulrici, Beitr. z. Klin. d. Tuberk., October, 23, 1920, xlvi, 38.*

Early Diagnosis of Hilum Tuberculosis.—An exhaustive discussion and presentation of the clinical and experimental literature are given. The patients were workmen's children from nontuberculous and tuberculous surroundings. More or less cough, night sweats and anemia were present, and a high suspicion of tuberculosis could be entertained. Physical examination of the lungs, excepting slight abnormalities, was negative. Roentgen ray examination was made on all the children, corroborating the absence of pulmonary findings in the majority of cases and drawing attention to a study of the hilum. The Pirquet and Ponndorf tuberculin tests were used on all cases. In all the children in which a positive tuberculin test was obtained there were found abnormalities in the hilum region, except in one case in which the X-ray plate was negative. The intensity of the tuberculin test seemed to parallel the amount of hilum change. The observations were made on 77 children; three with pulmonary tuberculosis, two of the latter indicating that phthisis in children may occur without cachetic symptoms. Phthisis is rare in children of school age. Retarded growth seemed to be a significant finding in children with hilum tuberculosis, they appearing two or three years behind normal children of the same age. The anemic, small and weakly patient, complaining of night sweats, being readily fatigued and backward in school, is easily recognized as of the hilum gland type. Of the 77 children, 47 were positive for hilum node tuberculosis, as determined by retarded growth, poor general condition, anemia, neck nodes, cough pointing to a respiratory origin, positive to tuberculin, and abnormal X-ray hilum findings. Eighteen were negative (clinical findings of cachexia, etc., being positive, but the tuberculin test negative); while 6 could not be completely studied; and in 3 the findings were inconclusive. The result of treatment, bringing the daily food up to 700 calories and giving codliver oil, seashore and sunlight therapy, with tuberculin in some cases, was highly beneficial. Phlyctenulae, otitis, rhinitis, and eczema

rapidly disappeared, and many neck nodes rapidly diminished in size. In one case with softening of the nodes, surgical treatment resulted in rapid healing. Tuberculin seemed to give good results eventually.—*Zur Frühdiagnose der Hilusdrüsentuberkulose, v. Ohlen, Beitr. z. Klin. d. Tuberk., November 25, 1920, xlv, 343.*

Laryngeal Tuberculosis.—Tuberculosis is the most frequent chronic disease of the larynx and is almost always secondary to pulmonary tuberculosis. Opposing the view that the infection of the larynx is lymphogenous, the author favors the theory that infection occurs by direct contact with tuberculous sputum. The incidence of laryngeal tuberculosis is probably greater than the figure of 25 per cent shown in statistics. The subjective symptoms include intermittent attacks of hoarseness, later becoming permanent and possibly ending in aphonia. Cough is common and may become paroxysmal. Pain is present in half the cases, starting as a tickling sensation. Dysphagia depends on infiltration and ulceration of the epiglottis and arytenoepiglottic folds. Ulceration of the cartilages may cause tenderness over the larynx. Dyspnea usually depends on the lung involvement. Ulceration may give rise to foul secretion and slight bleeding. Objectively, one of the early signs is pallor of the laryngeal mucosa and some mention a congestion in the region of the vocal processes. Edema of the interarytenoid space and imperfect adduction of the vocal cords follow. The infiltration then extends to the arytenoid, the arytenoepiglottic folds and the epiglottis. The process may not follow such a course but may commence at almost any point. As the tubercles coalesce and soften, ulceration ensues, involving superficial structures, or penetrating even to the cartilaginous framework of the larynx. At this stage of the disease, there is a stale, mouldy odor coming from the mouth. Between the stages of tumefaction and ulceration a tuberculoma may sometimes be seen in the interarytenoid space. In differentiating tuberculosis from syphilis of the larynx it should be remembered that the former usually involves the posterior part of the organ with multiple lesions, while syphilis is usually anterior and not multiple. If cancer is suspected it may be necessary to study microscopically an excised section. The general treatment is the same as that for pulmonary tuberculosis. Vocal rest is advised. If the diagnosis is uncertain a course of iodides and mercury should be given. In the early stages 1 per cent zinc sulphate or 3 per cent formaldehyde sprays may be of value; or the area of tumefaction may be punctured with a pointed, hot cautery to stimulate inflammatory reaction. During the ulcerative stage curettage and lactic acid applications have been tried without effect. Cauterization by heat and radiotherapy (X-ray, radiant ray, sun ray, radium) may be of some value. To relieve dysphagia a 2 per cent cocaine spray may be used before meals. Amputation of a badly ulcerated epiglottis may help. Injection of the superior laryngeal nerve is of great value. Tube feeding or rectal feeding may be necessary. To relieve dyspnea, tracheotomy is sometimes indicated. For pain, orthoform or anesthesin lozenges are good. Insufflations of aristol and orthoform or laryngotracheal injections of menthol and camphor in oil may be of value.—*Laryngeal Tuberculosis, S. Cohen, N. York M. J., December 7, 1921, cxiv, 636.*

Spontaneous Pneumothorax in Tuberculosis.—A spontaneous pneumothorax occurs much more frequently in pulmonary tuberculosis than is generally recognized. It is, of course, a not uncommon accident in artificial pneumothorax therapy, and is easily recognized under these circumstances by discovery of suddenly altered intrathoracic pressure, in the absence of any fresh or suddenly increased effusion. The ease by which in these cases urgent or unfavorable symptoms are corrected in many instances, by air withdrawal and restitution of the proper ordinary intrathoracic pressure, points the way toward their proper handling, when occurring in the nonsurgically treated cases of pulmonary tuberculosis. While recurring open or valvular types of this accident are difficult to control and may require many repeated withdrawals of air, at times without benefit, fortunately most spontaneous pneumothoraces are of the closed type and susceptible to surgical correction, where their natural involution is delayed or where urgent symptoms are not controlled by expectant treatment. They should be suspected in the face of any unusual rise of temperature or shortness of breath; insomuch as frequently they are only partial, and the classical picture of extreme prostration is considerably modified, and recognition and correct handling of the complication will obviate the unfavorable turn in the course of the disease, so often thereby caused. Subsequent effusions, septic or otherwise, are handled according to clinical indications.—*Spontaneous Pneumothorax in Pulmonary Tuberculosis, I. S. Kahn, Texas State J. Med., December, 1921, xvii, 384.*